RAM

2014

OWNER'S MANUAL

Ram Truck

Diesel Supplement

VEHICLES SOLD IN CANADA

With respect to any Vehicles Sold in Canada, the name Chrysler Group LLC shall be deemed to be deleted and the name Chrysler Canada Inc. used in substitution therefore.

DRIVING AND ALCOHOL

Drunken driving is one of the most frequent causes of accidents.

Your driving ability can be seriously impaired with blood alcohol levels far below the legal minimum. If you are drinking, don't drive. Ride with a designated non-drinking driver, call a cab, a friend, or use public transportation.

WARNING!
Driving after drinking can lead to an accident. Your perceptions are less sharp, your reflexes are slower, and your judgment is impaired when you have been drinking. Never drink and then drive.

This manual illustrates and describes the operation of features and equipment that are either standard or optional on this vehicle. This manual may also include a description of features and equipment that are no longer available or were not ordered on this vehicle. Please disregard any features and equipment described in this manual that are not on this vehicle.

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RAM DIESEL SUPPLEMENT

RAM 1500 3

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RAM 1500

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INTRODUCTION

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A MESSAGE FROM CHRYSLER GROUP LLC

Chrysler Group LLC welcome you as a turbocharged diesel-powered truck owner. Your diesel truck will sound, feel, drive, and operate differently from a gasoline-powered truck. It is important that you read and understand this manual.

Almost 100% of the heavy trucks in the United States and Canada are diesel-powered because of the fuel economy, rugged durability, and high torque which permits pulling heavy loads.

You may find that some of the starting, operating, and maintenance procedures are different. However, they are simple to follow and careful adherence to them will ensure that you take full advantage of the features of this engine.

NOTE: Some aftermarket products may cause severe engine/transmission and/or exhaust system damage. Your vehicle's Powertrain Control Systems can detect and store information about vehicle modifications that increase horsepower and torque output such as whether or not performance-enhancing powertrain components, commonly referred to as downloaders, power boxes, or performance chips have been used.

This information cannot be erased and will stay in the system's memory even if the modification is removed. This information can be retrieved by Chrysler Group LLC, and service and repair facilities, when servicing your vehicle. This information may be used to determine if repair will be covered by New Vehicle Limited Warranty.

There is a probability that the use of a "performance chip" will prohibit the engine from starting. In this instance, the vehicle will need to be serviced by a authorized dealer in order to return the vehicle to it's factory settings.

THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

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REMOTE STARTING SYSTEM

This system uses the Remote Keyless Entry (RKE) transmitter to start the engine conveniently from outside the vehicle while still maintaining security. The system has a range of approximately 300 ft (91 m).

NOTE:

- The vehicle must be equipped with an automatic transmission to be equipped with Remote Start.
- The Remote Start system will wait for the "Wait To Start" amber telltale to extinguish before cranking the engine. This allows time for the engine pre-heat cycle to pre-heat the cylinder air, and is normal in cold weather. Refer to "Electronic Vehicle Information Center/EVIC Warning Lights" in "Understanding Your Instrument Panel" for further information on the "Wait To Start" amber telltale and the pre-heat cycle.

How To Use Remote Start

All of the following conditions must be met before the engine will remote start:

- Shift lever in PARK
- Doors closed
- Hood closed
- HAZARD switch off
- BRAKE switch inactive (brake pedal not pressed)
- Battery at an acceptable charge level
- RKE PANIC button not pressed
- Fuel meets minimum requirement
- Water In Fuel Indicator Light is not illuminated
- "Wait To Start" telltale is not illuminated

WARNING!

- **Do not start or run an engine in a closed garage or confined area. Exhaust gas contains Carbon Monoxide (CO) which is odorless and colorless. Carbon Monoxide is poisonous and can cause serious injury or death when inhaled.**
- **Keep Remote Keyless Entry (RKE) transmitters away from children. Operation of the Remote Start System, windows, door locks or other controls could cause serious injury or death.**

ENGINE BREAK-IN RECOMMENDATIONS

The diesel engine does not require a break-in period due to its construction. Normal operation is allowed, providing the following recommendations are followed:

- Warm up the engine before placing it under load.
- Do not operate the engine at idle for prolonged periods.
- Use the appropriate transmission gear to prevent engine lugging.

- Observe vehicle oil pressure and temperature indicators.
- Check the coolant and oil levels frequently.
- Vary throttle position at highway speeds when carrying or towing significant weight.

NOTE: Light duty operation such as light trailer towing or no load operation will extend the time before the engine is at full efficiency. Reduced fuel economy and power may be seen at this time.

The engine oil installed in the engine at the factory is a high-quality energy conserving type lubricant. Oil changes should be consistent with anticipated climate conditions under which vehicle operations will occur. The recommended viscosity and quality grades are shown under “Fluids, Lubricants and Genuine Parts”, under “Maintenance Procedures” in this manual. NON-DETERGENT OR STRAIGHT MINERAL OILS MUST NEVER BE USED.

UNDERSTANDING YOUR INSTRUMENT PANEL

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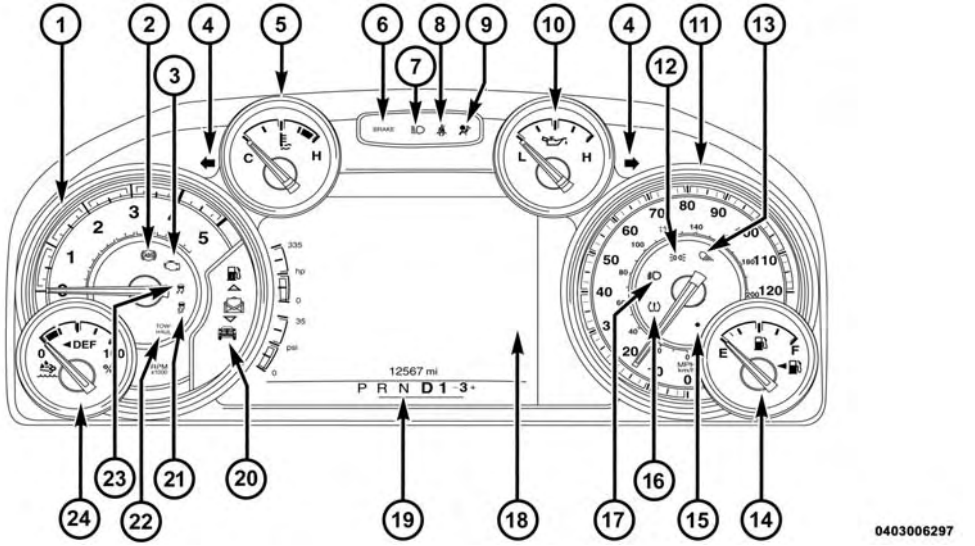
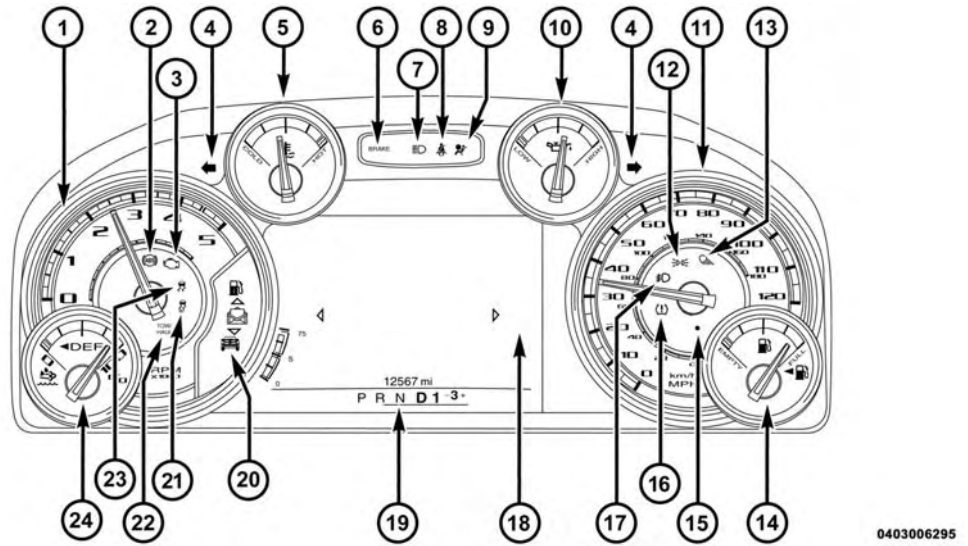
INSTRUMENT CLUSTER



INSTRUMENT CLUSTER — LARAMIE



INSTRUMENT CLUSTER DESCRIPTIONS

1. Tachometer

The tachometer indicates engine speed in Revolutions Per Minute (RPM x 1000).

CAUTION!

Do not operate the engine with the tachometer pointer at high RPM for extended periods. Engine operation over 3200 RPM (Redline) can result in significant damage that will not be covered under warranty.

2. Anti-Lock Brake (ABS) Light

This light monitors the Anti-lock Brake System (ABS). The light will turn on when the ignition switch is turned to the ON/RUN position and may stay on for as long as four seconds.

If the ABS light remains on or turns on while driving, it indicates that the anti-lock portion of the brake system is not functioning and that service is required. However, the conventional brake system will continue to operate normally if the BRAKE warning light is not on.

If the ABS light is on, the brake system should be serviced as soon as possible to restore the benefits of anti-lock brakes. If the ABS light does not turn on when the ignition switch is turned to the ON/RUN position, have the light inspected by an authorized dealer.

3. Malfunction Indicator Light (MIL)

The Malfunction Indicator Light (MIL) is part of an onboard diagnostic (OBDII) system which monitors the emissions and engine control system. If the vehicle is ready for emissions testing, the light will come on when the ignition is first turned on and remain on, as a bulb check, until the engine is started. If the vehicle is not ready for emissions testing the light will come on when the ignition is first turned on and remain on for 15 seconds, then blink for 5 seconds, and remain on until the vehicle is started. If the bulb does not come on during starting, have the condition investigated promptly.

If this light comes on and remains on while driving, it suggests a potential engine control problem and the need for system service.

Although your vehicle will usually be drivable and not need towing, see your authorized dealer for service as soon as possible.

CAUTION!

Prolonged driving with the Malfunction Indicator Light (MIL) on could cause damage to the engine control system. It also could affect fuel economy and drivability. If the MIL is flashing, severe catalytic converter damage and power loss will soon occur. Immediate service is required.

WARNING!

A malfunctioning catalytic converter, as referenced above, can reach higher temperatures than in normal operating conditions. This can cause a fire if you drive slowly or park over flammable substances such as dry plants, wood, cardboard, etc. This could result in death or serious injury to the driver, occupants or others.

4. Turn Signal Indicators

The arrow will flash with the exterior turn signal when the turn signal lever is operated.

NOTE:

A continuous chime will sound if the vehicle is driven more than 1 mile (1.6 km) with either turn signal on.

Check for an inoperative outside light bulb if either indicator remains on and does not flash, or flashes at a rapid rate.

5. Engine Coolant Temperature

This gauge shows the engine coolant temperature. The gauge pointer will likely show higher temperatures when driving in hot weather, up mountain grades, or in heavy stop and go traffic. If the red Warning Light turns on while driving, safely bring the vehicle to a stop, and turn off the engine. DO NOT operate the vehicle until the cause is corrected.

CAUTION!

Driving with a hot engine cooling system could damage your vehicle. If the temperature gauge reads "H" pull over and stop the vehicle. Idle the vehicle with the air conditioner turned off until the pointer drops back into the normal range. If the pointer remains on the "H" and you hear continuous chimes, turn the engine off immediately and call an authorized dealer for service.

WARNING!

A hot engine cooling system is dangerous. You or others could be badly burned by steam or boiling coolant. You may want to call an authorized dealer for service if your vehicle overheats. If you decide to look under the hood yourself, see "Maintaining Your

(Continued)

WARNING! *(Continued)*

Vehicle." Follow the warnings under the "Cooling System Pressure Cap" paragraph.

6. Brake Warning Light

This light monitors various brake functions, including brake fluid level and parking brake application. If the brake light turns on it may indicate that the parking brake is applied, that the brake fluid level is low, or that there is a problem with the Anti-lock Brake System reservoir.

If the light remains on when the parking brake has been disengaged, and the fluid level is at the full mark on the master cylinder reservoir, it indicates a possible brake hydraulic system malfunction or that a problem with the Brake Booster has been detected by the Anti-Lock Brake System (ABS) / Electronic Stability Control (ESC) system. In this case, the light will remain on until the condition

has been corrected. If the problem is related to the brake booster, the ABS pump will run when applying the brake and a brake pedal pulsation may be felt during each stop.

The dual brake system provides a reserve braking capacity in the event of a failure to a portion of the hydraulic system. A leak in either half of the dual brake system is indicated by the Brake Warning Light, which will turn on when the brake fluid level in the master cylinder has dropped below a specified level.

The light will remain on until the cause is corrected.

NOTE: The light may flash momentarily during sharp cornering maneuvers, which change fluid level conditions. The vehicle should have service performed, and the brake fluid level checked.

If brake failure is indicated, immediate repair is necessary.

WARNING!

Driving a vehicle with the red brake light on is dangerous. Part of the brake system may have failed. It will take longer to stop the vehicle. You could have a collision. Have the vehicle checked immediately.

Vehicles equipped with the ABS, are also equipped with Electronic Brake Force Distribution (EBD). In the event of an EBD failure, the Brake Warning Light will turn on along with the ABS Light. Immediate repair to the ABS system is required.

Operation of the Brake Warning Light can be checked by turning the ignition switch from the OFF position to the ON/RUN position. The light should illuminate for approximately two seconds. The light should then turn off unless the parking brake is applied or a brake fault is detected. If the light does not illuminate, have the light inspected by an authorized dealer.

The light also will turn on when the parking brake is applied with the ignition switch in the ON/RUN position.

NOTE: This light shows only that the parking brake is applied. It does not show the degree of brake application.

7. High Beam Indicator

This indicator shows that headlights are on high beam. Push the multifunction lever forward to switch the headlights to high beam, and pull toward yourself (normal position) to return to low beam.

8. Seat Belt Reminder Light

When the ignition switch is first turned to ON/RUN, this light will turn on for four to eight seconds as a bulb check. During the bulb check, if the driver's seat belt is unbuckled, a chime will sound. After the bulb check or when driving, if the driver's seat belt remains unbuckled, the seat belt reminder light will flash or remain on continuously. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

9. Air Bag Warning Light

This light will turn on for four to eight seconds as a bulb check when the ignition switch is first turned to ON/RUN. If the light is either not on during starting, stays on, or turns on while driving, have the system inspected at an authorized dealer as soon as possible. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

10. Engine Oil Pressure

The pointer should always indicate some oil pressure when the engine is running. A continuous high or low reading under normal driving conditions may indicate a lubrication system malfunction. Immediate service should be obtained from an authorized dealer.

If the gauge pointer moves to either extreme of the gauge, the Check Gauges indicator will illuminate and a single chime will sound.

11. Speedometer

The speedometer shows the vehicle speed in miles per hour and/or kilometers per hour (mph/km/h).

12. Park/Headlight ON Indicator — If Equipped

This indicator will illuminate when the park lights or headlights are turned on.

13. Cargo Light

The cargo light will illuminate when the cargo light is activated by pressing the cargo light button on the headlight switch.

14. Fuel Gauge

Shows level of fuel in tank when ignition switch is in the ON/RUN position.

15. Vehicle Security Light — If Equipped

This light will flash at a fast rate for approximately 15 seconds, when the vehicle security alarm is arming, and then will flash slowly until the vehicle is disarmed.

16. Tire Pressure Monitoring Telltale Light

Each tire, including the spare (if provided), should be checked monthly when cold and inflated to the inflation pressure recommended by the vehicle manufacturer on the vehicle placard or tire inflation pressure label. (If your vehicle has tires of a different size than the size indicated on the vehicle placard or tire inflation pressure label, you should determine the proper tire inflation pressure for those tires.)

As an added safety feature, your vehicle has been equipped with a Tire Pressure Monitoring System (TPMS) that illuminates a low tire pressure telltale when one or more of your tires is significantly under-inflated. Accordingly, when the low tire pressure telltale illuminates, you should stop and check your tires as soon as possible, and inflate them to the proper pressure. Driving on a significantly under-inflated tire causes the tire to overheat and can lead to tire failure. Under-inflation also reduces fuel efficiency and tire tread life, and may affect the vehicle's handling and stopping ability.

Please note that the TPMS is not a substitute for proper tire maintenance, and it is the driver's responsibility to maintain correct tire pressure, even if under-inflation has not reached the level to trigger illumination of the TPMS low tire pressure telltale.

Your vehicle has also been equipped with a TPMS malfunction indicator to indicate when the system is not operating properly. The TPMS malfunction indicator is combined with the low tire pressure telltale. When the system detects a malfunction, the telltale will flash for approximately one minute and then remain continuously illuminated. This sequence will continue upon subsequent vehicle start-ups as long as the malfunction exists. When the malfunction indicator is illuminated, the system may not be able to detect or signal low tire pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of replacement or alternate tires or wheels on the vehicle that prevent the TPMS from functioning properly. Always check the TPMS malfunction telltale after replacing one or more tires or wheels on your vehicle, to ensure that the replacement or alternate tires and wheels allow the TPMS to continue to function properly.

CAUTION!

The TPMS has been optimized for the original equipment tires and wheels. TPMS pressures and warning have been established for the tire size equipped on your vehicle. Undesirable system operation or sensor damage may result when using replacement equipment that is not of the same size, type, and/or style. Aftermarket wheels can cause sensor damage. Do not use tire sealant from a can or balance beads if your vehicle is equipped with a TPMS, as damage to the sensors may result.

NOTE: The TPMS telltale is also accompanied by a "Low Tire" message in the odometer (Base Cluster), or in the Electronic Vehicle Information Center (EVIC) screen indicating "Low Tire" for EVIC enabled clusters.

17. Front Fog Light Indicator — If Equipped

This indicator will illuminate when the front fog lights are on.

18. Electronic Vehicle Information Center (EVIC)

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster. For further information, refer to "Electronic Vehicle Information Center (EVIC)".

19. Transmission Gear Position Indicator

The Transmission Gear Position Indicator is self-contained within the instrument cluster. It displays the gear range of the automatic transmission.

NOTE: The highest available transmission gear is displayed in the lower right corner of the Electronic Vehicle Information Center (EVIC) whenever the Electronic Range Select (ERS) feature is active. Use the +/- selector on the steering wheel to activate ERS. Refer to "Automatic Transmission" in "Starting And Operating" for further information.

20. Electronic Vehicle Information Center (EVIC) Menu

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster. For further information, refer to "Electronic Vehicle Information Center (EVIC)".

21. Electronic Stability Control (ESC) OFF Indicator Light — If Equipped

This light indicates that the Electronic Stability Control (ESC) is in Partial Off or Full Off mode.

22. TOW/HAUL

The TOW HAUL button is located on the center stack upper switch bank. This light will illuminate when TOW HAUL mode is selected.

23. Electronic Stability Control (ESC) Activation/ Malfunction Indicator Light — If Equipped

The "ESC Activation/Malfunction Indicator Light" in the instrument cluster will come on when the ignition switch is turned to the ON/RUN position. It should go out with the engine running. If the "ESC Activation/Malfunction Indicator Light" comes on continuously with the engine running, a malfunction has been detected in the ESC system. If this light remains on after several ignition cycles, and the vehicle has been driven several miles (kilometers) at speeds greater than 30 mph (48 km/h), see your authorized dealer as soon as possible to have the problem diagnosed and corrected.

NOTE:

The "ESC Off Indicator Light" and the "ESC Activation/Malfunction Indicator Light" come on momentarily each time the ignition switch is turned to ON/RUN.

Each time the ignition is turned to ON/RUN, the ESC system will be ON, even if it was turned off previously.

The ESC system will make buzzing or clicking sounds when it is active. This is normal; the sounds will stop when ESC becomes inactive following the maneuver that caused the ESC activation.

24. DEF Gauge

The DEF Gauge displays the actual level of Diesel Exhaust Fluid in the DEF tank. Diesel Exhaust Fluid (DEF) is required to maintain normal vehicle operation and emissions compliance. More information is available in the Electronic Vehicle Information (EVIC) section under the heading of Diesel Exhaust Fluid (DEF) Warning Messages.

ELECTRONIC VEHICLE INFORMATION CENTER (EVIC)

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster.

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Electronic Vehicle Information Center (EVIC)

This system conveniently allows the driver to select a variety of useful information by pressing the switches mounted on the steering wheel.

Refer to "Electronic Vehicle Information Center – If Equipped" in the Owner's Manual for further information.

EVIC Displays

When the appropriate conditions exist, the EVIC displays the following messages:

- System Setup Unavailable – Vehicle Not in Park
- System Setup Unavailable – Vehicle in Motion
- Perform Service
- Exhaust Filter Full Safely Drive at Highway Speeds To Remedy
- Exhaust Filter XX% Full – Power Reduced See Dealer
- Exhaust Service Required – See Dealer Now
- Exhaust System – Filter XX% Full Service Required See Dealer
- Exhaust System – Regeneration In Process Exhaust Filter XX% Full

- Exhaust System – Regeneration Completed
- Engine Will Not Restart in XXXX mi DEF Low Refill Soon
- Engine Will Not Restart in XXXX mi Refill DEF
- Engine Will Not Restart Refill DEF
- Service DEF System See Dealer
- Incorrect DEF Detected See Dealer
- Engine Will Not Restart in XXX mi Service DEF See Dealer
- Engine Will Not Restart Service DEF System See Dealer

EVIC Amber Telltales

This area will show reconfigurable amber caution telltales. These telltales include:

Water In Fuel Indicator Light

The "Water In Fuel Indicator Light" will illuminate when there is water detected in the fuel filters. If this light remains on, DO NOT start the vehicle before you drain the water from the fuel filters to prevent engine damage. Refer to "Maintenance Procedures/ Draining Fuel/Water Separator Filters" in "Maintaining Your Vehicle" for further information.

Wait To Start Light

The "Wait To Start" telltale will illuminate for approximately two seconds when the ignition is turned to the RUN position. It's duration may be longer based on colder operating conditions. Vehicle will not initiate start until telltale is out. Refer to "Starting Procedures" in "Starting and Operating" for further information.

NOTE: The "Wait To Start" telltale may not illuminate if the intake manifold temperature is warm enough.

Low Diesel Exhaust Fluid Light

This telltale will turn on to indicate the Diesel Exhaust Fluid (DEF) is low.

Diesel Exhaust Fluid (DEF) Warning Messages

Your vehicle will begin displaying warning messages when the DEF level reaches a driving range of approximately 500 miles (800 km). If the following warning message sequence is ignored, your vehicle may not restart unless DEF is added with in the displayed mileage shown in the EVIC message.

- **Engine Will Not Restart in XXXX mi DEF Low Refill Soon** – This message will display when DEF driving range is less than 500 miles, DEF fluid top off is required with in the displayed mileage. The message will be displayed in the EVIC during vehicle start up with the current allowed mileage and accompanied by a single chime. The remaining mileage can be pulled up anytime by way of the "Messages" list within the EVIC
- **Engine Will Not Restart in XXXX mi Refill DEF** – This message will display when DEF driving range is less than 200 miles. It is also displayed at 150 miles and 100 miles. DEF fluid top off is required with in the displayed mileage. The message will be displayed in the EVIC during vehicle start up with an updated distance mileage, and it will be accompanied by a single chime. Stating at 100 miles, remaining range will be continuously displayed while operating the vehicle. Chimes will also accompany the 75, 50 and 25 mile remaining distances. The DEF Low telltale will be on continuously until DEF fluid is topped off.
- **Engine Will Not Restart Refill DEF** – This message will display when the DEF driving range is less than 1 mile, DEF fluid top off is required or the engine will not restart. The message will be displayed in the EVIC during vehicle start up, and it will be accompanied by a single chime. The DEF Low telltale will be illuminated continuously until DEF fluid tank is filled with a minimum of two gallons of DEF.

Diesel Exhaust Fluid (DEF) Fault Warning Messages

There are different messages which are displayed if the vehicle detects that the DEF system has been filled with a fluid other than DEF, has experienced component failures, or when tampering has been detected.

When the DEF system needs to be serviced the following warnings will display:

- **Service DEF System See Dealer** — This message will display when the fault is initially detected and each time the vehicle is started. The message will be accompanied by a single chime and the Malfunction Indicator Light. We recommend you drive to your nearest authorized dealer and have your vehicle serviced immediately. If not corrected in 50 miles, vehicle will enter the "Engine Will not restart in XXXmi Service DEF See dealer" warning stage and message.
- **Incorrect DEF Detected See Dealer** — This message will display if the DEF system has detected the incorrect fluid has been introduced to the DEF tank. The message will be accompanied by a single chime. We recommend you drive to your nearest authorized dealer and have your vehicle serviced immediately. If not corrected in 50 miles, vehicle will enter the Engine Will not restart in XXX mi Service DEF See dealer warning stage and message.
- **Engine Will Not Restart in XXX mi Service DEF See Dealer** — This message is first displayed if the fault detected is not serviced after 50 miles of operation. It is also displayed at 150 miles 125 miles and 100 miles. System service is required within the displayed mileage. The message will be displayed in the EVIC during vehicle start up with an updated distance mileage, and it will be accompanied by a single chime. Starting at 100 miles, remaining range will be continuously displayed while operating the vehicle. Chimes will also accompany the 75, 50 and 25 mile remaining distances. We recommend you drive to your nearest authorized dealer and have your vehicle serviced immediately.

- **Engine Will Not Restart Service DEF System See Dealer** — This message will display if DEF system issue detected is not serviced during the allowed period. Your engine will not restart unless your vehicle is serviced by your authorized dealer. This message will be displayed when under 1 mile until engine will not start and each time the vehicle is started, and will be continuously displayed. The message will be accompanied by a single chime. Your Malfunction Indicator Light will be continuously illumined. We highly recommend you drive to your nearest authorized dealer if the message appears while engine is running.
- **Engine Will Not Start Service DEF System See Dealer** — This message will display when the fault detected is not serviced after the Engine will not restart Service DEF System See Dealer message is displayed on the next subsequent restart. Your engine will not start unless you vehicle is serviced by your authorized dealer. The message will be accompanied by a single chime. Your Malfunction Indicator Light will be continuously illuminated. If the message appears and you can not start the engine, we recommend you have your vehicle towed to your nearest authorized dealer immediately.

Vehicle Information (Customer Information Features)

Press and release the UP or DOWN button until "Vehicle Info" displays in the EVIC and press the SELECT button. Press the RIGHT and LEFT button to scroll through the available information displays, then press SELECT to display anyone of the following choices.

- *Battery Voltage*

Displays the actual battery voltage.

- *Coolant Temp*

Displays the actual coolant temperature.

- *Trans Temperature*

Displays the actual transmission sump temperature.

- *Tire Pressure Monitor System*

Displays the actual tire pressure.

- *Oil Life*

Displays the actual oil life.

- *Engine Hours*

Displays the actual engine hours.

- *Fuel Filter Life & Gauge Summary*

Displays the actual fuel filter life.

STARTING AND OPERATING

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STARTING PROCEDURES

Before starting your vehicle, adjust your seat, both inside and outside mirrors, and fasten your seat belts.

The starter is allowed to crank for up to 30-second intervals. Waiting a few minutes between such intervals will protect the starter from overheating.

WARNING!

Never leave children alone in a vehicle, or with access to an unlocked vehicle. Leaving children in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not

(Continued)

WARNING! *(Continued)*

leave the ignition of a vehicle equipped with Keyless Enter-N-Go™ ACC or RUN mode. A child could operate power windows, other controls, or move the vehicle.

NOTE: Engine start up in very low ambient temperature could result in evident white smoke. This condition will disappear as the engine warms up.

CAUTION!

- **The engine is allowed to crank as long as 30 seconds. If the engine fails to start during this period, please wait at least two minutes for the starter to cool before repeating start procedure.**

(Continued)

CAUTION! *(Continued)*

- **If the "Water in Fuel Indicator Light" remains on, DO NOT START engine before you drain the water from the fuel filters to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.**

Normal Starting

Normal starting of either a warm or cold engine is obtained without pumping or pressing the accelerator pedal. Turn the key fob to the START position and release when the engine starts. If the engine fails to start, turn the key fob to the OFF position, wait five seconds, then repeat the "Normal Starting" procedure.

Automatic Transmission

Start the engine with the shift lever in the NEUTRAL or PARK position. Apply the brake before shifting to any driving range.

Tip Start Feature

Do not press the accelerator. Turn the ignition switch briefly to the START position and release it. The starter motor will continue to run but will automatically disengage when the engine is running.

Keyless Enter-N-Go™

This feature allows the driver to operate the ignition switch with the push of a button, as long as the Remote Start/Keyless Enter-N-Go™ Key Fob is in the passenger compartment.

Normal Starting Procedure – Keyless Enter-N-Go™

Observe the instrument panel cluster lights when starting the engine.

NOTE: Normal starting of either a cold or a warm engine is obtained without pumping or pressing the accelerator pedal

1. Always apply the parking brake.
2. For vehicles equipped with an automatic transmission, place the shift lever into the PARK position.
3. Press and hold the brake pedal while pressing the ENGINE START/STOP button once.

NOTE: A delay of the start of up to five seconds is possible under very cold conditions. The "Wait to Start" telltale will be illuminated during the pre-heat process and the start will commence upon the telltale going out.

CAUTION!

If the "Water in Fuel Indicator Light" remains on, DO NOT START the engine before you drain the water from the fuel filters to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.

4. The system will take over and attempt to start the vehicle. If the vehicle fails to start, the starter will disengage automatically after 30 seconds.
5. If you wish to stop the cranking of the engine prior to the engine starting, press the button again.
6. Check that the oil pressure warning light has turned off.
7. Release the parking brake.

Extreme Cold Weather

The engine block heater is a resistance heater installed in the water jacket of the engine. It requires a 110–115 Volt AC electrical outlet with a grounded, three-wire extension cord. Its use is recommended for environments that routinely fall below -10°F. It should be used when the vehicle has not been running overnight or longer periods and should be plugged in two hours prior to start. Its use is required for cold starts with temperatures under -20°F.

NOTE: The engine block heater cord is a factory installed option. If your vehicle is not equipped, heater cords are available from your authorized MOPAR® dealer.

- A 12 Volt heater built into the fuel filter housing aids in preventing fuel gelling. It is controlled by a built-in thermostat.
- A Diesel Pre-Heat system both improves engine starting and reduces the amount of white smoke generated by a warming engine.

Starting Fluids

The engine is equipped with a glow plug preheating system. If the instructions in this manual are followed, the engine should start in all conditions and no type of starting fluid should be used.

WARNING!

- **Do not leave children or animals inside parked vehicles in hot weather. Interior heat build up may cause serious injury or death.**
- **When leaving the vehicle, always remove the key fob and lock your vehicle.**

(Continued)

WARNING! ***(Continued)***

- **Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition of a vehicle equipped with Keyless Enter-N-Go in the ACC or ON/RUN mode. A child could operate power windows, other controls, or move the vehicle.**

NORMAL OPERATION

Observe the following when the diesel engine is operating.

- All message center lights are off.
- Malfunction Indicator Light (MIL) is off.
- Engine Oil Pressure telltale is not illuminated.
- Voltmeter operation:

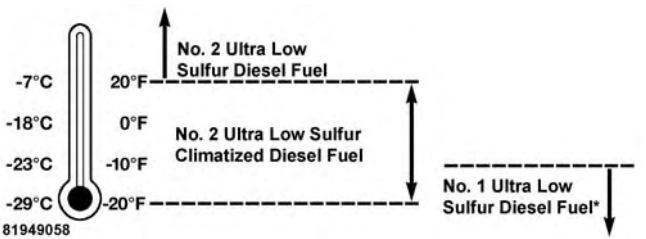
The voltmeter may show a gauge fluctuation at various engine temperatures. This is caused by the glow plug heating system. The number of cycles and the length of the cycling operation is controlled by the engine control module. Glow plug heater operation can run for several minutes, once the heater operation is complete the voltmeter needle will stabilize.

Cold Weather Precautions

Operation in ambient temperature below 32°F (0°C) may require special considerations. The following charts suggest these options:

Fuel Operating Range

NOTE: Use "Ultra Low Sulfur Diesel Fuels" **ONLY.**



*No. 1 Ultra Low Sulfur Diesel Fuel should only be used where extended arctic conditions (-10°F/-23°C) exist.

NOTE:

- Use of Climatized Ultra Low Sulfur Diesel Fuel or Number 1 Ultra Low Sulfur Diesel Fuel results in a noticeable decrease in fuel economy.
- Climatized Ultra Low Sulfur Diesel Fuel is a blend of Number 2 Ultra Low Sulfur and Number 1 Ultra Low Sulfur Diesel Fuels which reduces the temperature at which wax crystals form in fuel.
- The fuel grade should be clearly marked on the pump at the fuel station.
- The engine requires the use of **"Ultra Low Sulfur Diesel Fuel"**. Use of incorrect fuel could result in engine and exhaust system damage. Refer to "Fuel Requirements" in "Starting and Operating" for further information.

Engine Oil Usage

Refer to "Maintenance Procedures" in "Maintaining Your Vehicle" for the correct engine oil viscosity.

Engine Warm-Up

Avoid full throttle operation when the engine is cold. When starting a cold engine, bring the engine up to operating speed slowly to allow the oil pressure to stabilize as the engine warms up.

If temperatures are below 32°F (0°C), operate the engine at moderate speeds for five minutes before full loads are applied.

Engine Idling

Avoid prolonged idling, long periods of idling may be harmful to your engine because combustion chamber temperatures can drop so low that the fuel may not burn completely. Incomplete combustion allows carbon and varnish to form on piston rings, cylinder head valves, and injector nozzles. Also, the unburned fuel can enter the crankcase, diluting the oil and causing rapid wear to the engine.

Stopping The Engine

Idle the engine a few minutes before routine shutdown. After full load operation, idle the engine three to five minutes before shutting it down. This idle period will allow the lubricating oil and coolant to carry excess heat away from the combustion chamber, bearings, internal components, and turbocharger. This is especially important for turbocharged diesel engines.

NOTE: Refer to the following chart for proper engine shutdown.

Driving Condition	Load	Turbo-charger Tempera-ture	Idle Time (min.) Be-fore En-gine Shut-down
Stop and Go	Empty	Cool	Less than One
Stop and Go	Medium		One
Highway Speeds	Medium	Warm	Two
City Traffic	Maximum GCWR		Three
Highway Speeds	Maximum GCWR		Four
Uphill Grade	Maximum GCWR	Hot	Five

NOTE: Under certain conditions the engine fan will run after the engine is turned off. These conditions are under high load and high temperature conditions.

Cooling System Tips – Automatic Transmission

To reduce potential for engine and transmission overheating in high ambient temperature conditions, take the following actions:

- *City Driving —*
When stopped, shift the transmission into NEUTRAL and increase engine idle speed.

- *Highway Driving —*
Reduce your speed.

- *Up Steep Hills —*
Select a lower transmission gear.

- *Air Conditioning —*
Turn it off temporarily.

Do Not Operate The Engine With Low Oil Pressure

If the low oil pressure warning light turns on while driving, stop the vehicle and shut down the engine as soon as possible. A chime will sound when the light turns on.

NOTE: Do not operate the vehicle until the cause it corrected. This light does not show how much oil is in the engine. The engine oil level must be checked under the hood.

CAUTION!

If oil pressure falls to less than normal readings, shut the engine off immediately. Failure to do so could result in immediate and severe engine damage.

Do Not Operate The Engine With Failed Parts

All engine failures give some warning before the parts fail. Be on the alert for changes in performance, sounds, and visual evidence that the engine requires service. Some important clues are:

- engine misfiring or vibrating severely
- sudden loss of power
- unusual engine noises
- fuel, oil or coolant leaks
- sudden change, outside the normal operating range, in the engine operating temperature
- excessive smoke
- oil pressure drop

ENGINE BLOCK HEATER — IF EQUIPPED

The engine block heater warms engine coolant and permits quicker starts in cold weather. Connect the heater cord to a ground-fault interrupter protected 110–115 Volt AC electrical outlet with a grounded, three-wire extension cord.

Its use is recommended for environments that routinely fall below -10°F (-23°C). It should be used when the vehicle has not been running overnight or longer periods and should be plugged in two hours prior to start. Its use is required for cold starts with temperatures under -20°F (-28°C).

To ensure reliable starting at these temperatures, use of an externally powered electric engine block heater (available from your authorized dealer) is recommended.

WARNING!

Remember to disconnect the cord before driving. Damage to the 110–115 Volt electrical cord could cause electrocution.

NOTE: The block heater will require 110 Volts AC and 6.5 Amps to activate the heater element.

FUEL REQUIREMENTS

Use good quality diesel fuel from a reputable supplier in your vehicle. Federal law requires that you must fuel this vehicle with Ultra Low Sulfur Highway Diesel fuel (15 ppm Sulfur maximum) and prohibits the use of Low Sulfur Highway Diesel fuel (500 ppm Sulfur maximum) to avoid damage to the emissions control system. For most year-round service, No. 2 diesel fuel meeting ASTM (formerly known as the American Society for Testing and Materials) specification D-975 Grade S15 will provide

good performance. If the vehicle is exposed to extreme cold (below 20°F or -7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters.

WARNING!

Do not use alcohol or gasoline as a fuel blending agent. They can be unstable under certain conditions and hazardous or explosive when mixed with diesel fuel.

Diesel fuel is seldom completely free of water. To prevent fuel system trouble, drain the accumulated water from the fuel/water separator using the fuel/water separator drain provided on the fuel filter housing. If you buy good quality fuel and follow the cold weather advice above, fuel conditioners should not be required in your vehicle. If available in your area, a high cetane "premium" diesel fuel may offer improved cold-starting and warm-up performance.

CAUTION!

If the "Water in Fuel Indicator Light" remains on, DO NOT START engine before you drain the water from the fuel filter(s) to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.

Fuel Specifications

This diesel engine has been developed to take advantage of the high energy content and generally lower cost No. 2 Ultra Low Sulfur diesel fuel or No. 2 Ultra Low Sulfur

climatized diesel fuels. Experience has shown that it also operates on No. 1 Ultra Low Sulfur diesel fuels or other fuels within specification.

NOTE: If you accidentally fill the fuel tank with gasoline on your diesel vehicle, Do not start the vehicle. If you restart your vehicle you risk damage the engine and fuel system. Please call your local dealer for service.

NOTE:

- A maximum blend of 5% biodiesel meeting ASTM specification D-975 may be used with your diesel engine without any adjustments to regular service schedules.
- Commercially available fuel additives are not necessary for the proper operation of your diesel engine.
- No. 1 Ultra Low Sulfur diesel fuel should only be used where extended arctic conditions (-10°F or -23°C) exist.

Biodiesel Fuel Requirements

A maximum blend of 5% biodiesel meeting ASTM specification D975 is recommended for use with your diesel engine. If frequent operation with Biodiesel blends are greater than 5% but not greater than 20% (B6 B20) is desired, the maintenance schedule is subject to shorter intervals.

The oil and filter change along with fuel filter replacement is subject to shorter intervals when operating your engine on biodiesel greater than 5%. Do not use biodiesel greater than 20%.

For regular use of biodiesel blends greater than 5% but not greater than 20% (B6 B20) it is important that you understand and comply with these requirements. Refer to the “Maintenance Chart” in the “Maintenance Schedules” section for further direction. Failure to comply with Oil Change requirements for vehicles operating on biodiesel blends greater than 5% but not greater than 20%

(B6–B20) will result in premature engine wear. Such wear is not covered by the New Vehicle Limited Warranty. Biodiesel is a fuel produced from renewable resources typically derived from animal fat, rapeseed oil (Rapeseed Methyl Ester (RME) base), or soybean oil (Soy Methyl Ester (SME or SOME) base). Biodiesel fuel has inherent limitations which require that you understand and adhere to the following requirements if you use blends of Biodiesel greater than 5% but not greater than 20% (B6-B20). There are no unique restrictions for the use of B5. Use of blends greater than 20% is not approved. Use of blends greater than 20% can result in engine damage. Such damage is not covered by the New Vehicle Limited Warranty

Biodiesel Fuel Properties – Low Ambient Temperatures

Biodiesel fuel may gel or solidify at low ambient temperatures, which may pose problems for both storage and operation. Precautions can be necessary at low ambient temperatures, such as storing the fuel in a heated building or a heated storage tank, or using cold temperature additives.

Fuel Quality – Must Comply with ASTM Standards

The quality of Biodiesel fuel may vary widely. Only fuel produced by a BQ9000 supplier to the following specifications may be blended to meet Biodiesel blend B6 - B20 fuel meeting ASTM specification D-7467:

- Petrodiesel fuel meeting ASTM specification D-975 and Biodiesel fuel (B100) meeting ASTM specification D-6751

Fuel Oxidation Stability – Must Use Fuel Within Six Months Of Manufacture

Biodiesel fuel has poor oxidation stability which can result in long term storage problems. Fuel produced to approved ASTM standards, if stored properly, provides for protection against fuel oxidation for up to six months.

Fuel Water Separation – Must Use Mopar Approved Fuel Filter Elements

Biodiesel fuel has a natural affinity to water and water accelerate microbial growth. Your Mopar filtration system is designed to provide adequate fuel water separation capabilities.

Fuel In Oil Dilution – Must Adhere To Required Oil Change Interval

Fuel dilution of lubricating oil has been observed with the use of Biodiesel fuel. Fuel in oil must not exceed 5%. To ensure this limit is met your oil change interval must be maintained with in the suggested schedule. The regular use of biofuels greater than 5% and less than 20% require intervals shorter than the outlined 10,000 miles and must not exceed the suggested schedule. When routinely operating on biofuels greater that 5% and less than 20%, oil and filter replacement intervals must not exceed 8,000 Miles or 6 months, which ever comes first.

Biodiesel Fuel Filter Change Intervals

The use of biofuels require intervals shorter than the outlined 30,000 miles (48 280 km) and must not exceed the suggested schedule. When operating on biofuels greater that 5% and less than 20%, fuel filter replacement intervals must not exceed 20,000 Miles (40 233 km).

NOTE: Under no circumstances should oil change intervals exceed 8,000 miles (12 875 km) or 6 months, if regular operation occurs with greater than 5% and less than 20% biodiesel blends. Under no circumstances should fuel filter intervals exceed 20,000 miles (40 233 km), if regular operation occurs with greater than 5% and less than 20% biodiesel blends. Failure to comply with these Oil Change and fuel filter requirements for vehicles operating on biodiesel blends up to B20 may result in premature engine wear. Such wear is not covered by the New Vehicle Limited Warranty. The engine may suffer severe damage if operated with concentrations of biodiesel higher than 20%.

TRAILER TOWING

In this section you will find safety tips and information on limits to the type of towing you can reasonably do with your vehicle. Before towing a trailer, carefully review this information to tow your load as efficiently and safely as possible.

To maintain the New Vehicle Limited Warranty coverage, follow the requirements and recommendations in this manual concerning vehicles used for trailer towing.

Common Towing Definitions

The following trailer towing related definitions will assist you in understanding the following information:

Gross Vehicle Weight Rating (GVWR)

The GVWR is the total allowable weight of your vehicle. This includes driver, passengers, cargo and tongue weight. The total load must be limited so that you do not

exceed the GVWR. Refer to "Vehicle Loading/Vehicle Certification Label" in "Starting and Operating" for further information.

Gross Trailer Weight (GTW)

The GTW is the weight of the trailer plus the weight of all cargo, consumables and equipment (permanent or temporary) loaded in or on the trailer in its "loaded and ready for operation" condition. The recommended way to measure GTW is to put your fully loaded trailer on a vehicle scale. The entire weight of the trailer must be supported by the scale.

Gross Combination Weight Rating (GCWR)

The GCWR is the total permissible weight of your vehicle and trailer when weighed in combination.

Gross Axle Weight Rating (GAWR)

The GAWR is the maximum capacity of the front and rear axles. Distribute the load over the front and rear axles evenly. Make sure that you do not exceed either front or rear GAWR. Refer to "Vehicle Loading/Vehicle Certification Label" in "Starting and Operating" for further information.

WARNING!

It is important that you do not exceed the maximum front or rear GAWR. A dangerous driving condition can result if either rating is exceeded. You could lose control of the vehicle and have an accident.

Tongue Weight (TW)

The tongue weight is the downward force exerted on the hitch ball by the trailer. In most cases it should not be less than 10% of the trailer load. You must consider this as part of the load on your vehicle.

Frontal Area

The frontal area is the maximum height multiplied by the maximum width of the front of a trailer.

Trailer Sway Control

The trailer sway control can be a mechanical telescoping link that can be installed between the hitch receiver and the trailer tongue that typically provides adjustable friction associated with the telescoping motion to dampen any unwanted trailer swaying motions while traveling.

If equipped, the electronic Trailer Sway Control (TSC) recognizes a swaying trailer and automatically applies individual wheel brakes and/or reduces engine power to attempt to eliminate the trailer sway.

Weight-Carrying Hitch

A weight-carrying hitch supports the trailer tongue weight, just as if it were luggage located at a hitch ball or some other connecting point of the vehicle. These kinds of hitches are the most popular on the market today and they are commonly used to tow small and medium sized trailers.

Weight-Distributing Hitch

A weight-distributing system works by applying leverage through spring (load) bars. They are typically used for heavier loads to distribute trailer tongue weight to the tow vehicle's front axle and the trailer axle(s). When used in accordance with the manufacturer's directions, it provides for a more level ride, offering more consistent

steering and brake control thereby enhancing towing safety. The addition of a friction / hydraulic sway control also dampens sway caused by traffic and crosswinds and contributes positively to tow vehicle and trailer stability. Trailer sway control and a weight distributing (load equalizing) hitch are recommended for heavier Tongue Weights (TW) and may be required depending on vehicle and trailer configuration / loading to comply with Gross Axle Weight Rating (GAWR) requirements.

WARNING!

- **An improperly adjusted Weight Distributing Hitch system may reduce handling, stability, braking performance, and could result in a collision.**
- **Weight Distributing Systems may not be compatible with Surge Brake Couplers. Consult with your hitch and trailer manufacturer or a reputable Recreational Vehicle dealer for additional information.**

Fifth-Wheel Hitch

The fifth-wheel hitch is a special high platform with a coupling that mounts over the rear axle of the tow vehicle in the truck bed. It connects a vehicle and fifth-wheel trailer with a coupling king pin.

Gooseneck Hitch

The gooseneck hitch employs a pivoted coupling arm which attaches to a ball mounted in the bed of a pickup truck. The coupling arm connects to the hitch mounted over the rear axle in the truck bed.

Trailer Hitch Classification

The following chart provides the industry standard for the maximum trailer weight a given trailer hitch class can tow and should be used to assist you in selecting the correct trailer hitch for your intended towing condition.

Trailer Hitch Classification Definitions	
Class	**Max. Trailer Hitch Industry Standards**
Class I - Light Duty	2,000 lbs (907 kg)
Class II - Medium Duty	3,500 lbs (1 587 kg)
Class III - Heavy Duty	5,000 lbs (2 268 kg)

Trailer Hitch Classification Definitions	
Class IV - Extra Heavy Duty	10,000 lbs (4 540 kg)
Fifth Wheel/Gooseneck	Greater than 10,000 lbs (4 540 kg)
Refer to the “Trailer Towing Weights (Maximum Trailer Weight Ratings)” for the Maximum Gross Trailer Weight (GTW) towable for your given drivetrain.	
All trailer hitches should be professionally installed on your vehicle.	

Trailer Towing Weights (Maximum Trailer Weight Ratings)

The rear bumper is intended to tow trailers up to a 5,000 lbs (2 268 kg) without added equipment or alterations to the standard equipment.

Ram 1500 Diesel

	1500 ST SLT Bighorn/Lonestar Laramie Outdoorsman
3.0L Turbo Diesel Eight-Speed Automatic Transmission	Max Towing: 9,250 lbs (4 196 kg) Max Payload: 1,520 lbs (689 kg)

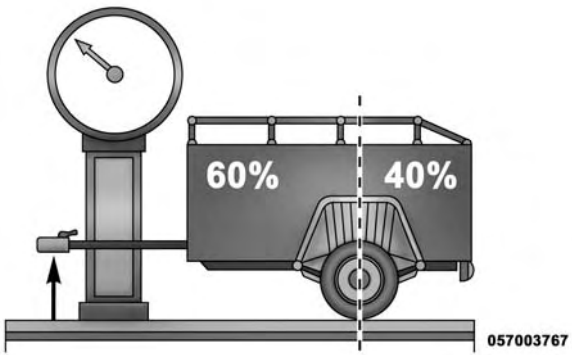
NOTE: For additional trailer towing information (maximum trailer weight ratings) refer to the following website addresses:

- **http://www.ramtrucks.com**
- **http://www.ramtruck.ca (Canada)**

Trailer And Tongue Weight

Always load a trailer with 60% to 65% of the weight in the front of the trailer. This places 10% to 15% of the GTW on the tow hitch of your vehicle. Loads balanced over the wheels or heavier in the rear can cause the trailer to sway **severely** side to side which will cause loss of control of the vehicle and trailer. Failure to load trailers heavier in front is the cause of many trailer collisions. Never exceed the maximum tongue weight stamped on your trailer

hitch.



Consider the following items when computing the weight on the rear axle of the vehicle:

- The tongue weight of the trailer
- The weight of any other type of cargo or equipment put in or on your vehicle
- The weight of the driver and all passengers.

NOTE: Remember that everything put into or on the trailer adds to the load on your vehicle. Also, additional factory-installed options or dealer-installed options must be considered as part of the total load on your vehicle. Refer to “Tire Safety Information/Tire and Loading Information Placard” in “Starting and Operating” for further information.

Towing Requirements

To promote proper break-in of your new vehicle drivetrain components the following guidelines are recommended:

CAUTION!

- **Do not tow a trailer at all during the first 500 miles (805 km) the new vehicle is driven. The engine, axle or other parts could be damaged.**
- **Then, during the first 500 miles (805 km) that a trailer is towed, do not drive over 50 mph (80 km/h) and do not make starts at full throttle. This helps the engine and other parts of the vehicle wear in at the heavier loads.**

WARNING!

Improper towing can lead to a collision. Follow these guidelines to make your trailer towing as safe as possible:

- **Make certain that the load is secured in the trailer and will not shift during travel. When trailering cargo that is not fully secured, dynamic load shifts can occur that may be difficult for the driver to control. You could lose control of your vehicle and have a collision.**
- **When hauling cargo or towing a trailer, do not overload your vehicle or trailer. Overloading can cause a loss of control, poor performance or damage to brakes, axle, engine, transmission, steering, suspension, chassis structure or tires.**

(Continued)

WARNING! ***(Continued)***

- **Safety chains must always be used between your vehicle and trailer. Always connect the chains to the hook retainers of the vehicle hitch. Cross the chains under the trailer tongue and allow enough slack for turning corners.**
- **Vehicles with trailers should not be parked on a grade. When parking, apply the parking brake on the tow vehicle. Put the tow vehicle transmission in PARK. For four-wheel drive vehicles, make sure the transfer case is not in NEUTRAL. Always, block or "chock" the trailer wheels.**
- **GCWR must not be exceeded.**
- **Total weight must be distributed between the tow vehicle and the trailer such that the following four ratings are not exceeded:**

1. GVWR

(Continued)

WARNING! ***(Continued)***

2. GTW
3. GAWR
4. Tongue weight rating for the trailer hitch utilized.

Towing Requirements – Tires

- Do not attempt to tow a trailer while using a compact spare tire.
- Proper tire inflation pressures are essential to the safe and satisfactory operation of your vehicle. Refer to "Tires – General Information" in "Starting and Operating" for proper tire inflation procedures.
- Check the trailer tires for proper tire inflation pressures before trailer usage.

- Check for signs of tire wear or visible tire damage before towing a trailer. Refer to "Tires – General Information" in "Starting and Operating" for the proper inspection procedure.
- When replacing tires, refer to "Tires – General Information" in "Starting and Operating" for proper tire replacement procedures. Replacing tires with a higher load carrying capacity will not increase the vehicle's GVWR and GAWR limits.

Towing Requirements – Trailer Brakes

- Do **not** interconnect the hydraulic brake system or vacuum system of your vehicle with that of the trailer. This could cause inadequate braking and possible personal injury.
- An electronically actuated trailer brake controller is required when towing a trailer with electronically actuated brakes. When towing a trailer equipped with a hydraulic surge actuated brake system, an electronic brake controller is not required.
- Trailer brakes are recommended for trailers over 1,000 lbs (454 kg) and required for trailers in excess of 1,653 lbs (750 kg).

CAUTION!

If the trailer weighs more than 1,000 lbs (454 kg) loaded, it should have its own brakes and they should be of adequate capacity. Failure to do this could lead to accelerated brake lining wear, higher brake pedal effort, and longer stopping distances.

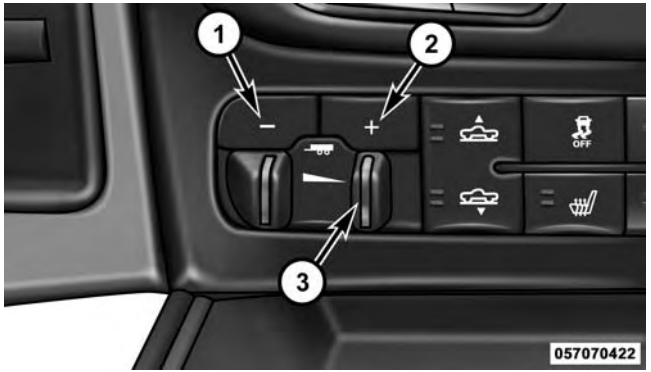
WARNING!

- **Do not connect trailer brakes to your vehicle's hydraulic brake lines. It can overload your brake system and cause it to fail. You might not have brakes when you need them and could have an accident.**
- **Towing any trailer will increase your stopping distance. When towing you should allow for additional space between your vehicle and the vehicle in front of you. Failure to do so could result in an accident.**

Integrated Trailer Brake Module – If Equipped

Your vehicle may have an Integrated Trailer Brake Module (ITBM) for Electric and Electric Over Hydraulic (EOH) trailer brakes.

NOTE: This module has been designed and verified with electric trailer brakes and new electric over hydraulic systems. Some previous EOH systems may not be compatible with ITBM.



1 — GAIN Adjustment Button
2 — GAIN Adjustment Button
3 — Manual Brake Control Lever

The user interface consists of the following:

Manual Brake Control Lever

Slide the manual brake control lever to the right to activate power to the trailer's electric brakes independent of the tow vehicle's brakes. If the manual brake control lever is activated while the brake is also applied, the greater of the two inputs determines the power sent to the trailer brakes.

The trailer and the vehicle's brake lamps will come on when either vehicle braking or manual trailer brakes are applied.

Trailer Brake Status Indicator Light

This light indicates the trailer electrical connection status.

If no electrical connection is detected after the ignition is turned on, pressing the GAIN adjustment button or

sliding the manual brake control lever will display the GAIN setting for 10 seconds and the "Trailer Brake Status Indicator Light" will not be displayed.

If a fault is detected in the trailer wiring or the Integrated Trailer Brake Module (ITBM), the "Trailer Brake Status Indicator Light" will flash.

GAIN Adjustment Buttons (+/-)

Pressing these buttons will adjust the brake control power output to the trailer brakes in 0.5 increments. The GAIN setting can be increased to a maximum of 10 or decreased to a minimum of 0 (no trailer braking).

GAIN

The GAIN setting is used to set the trailer brake control for the specific towing condition and should be changed as towing conditions change. Changes to towing conditions include trailer load, vehicle load, road conditions and weather.

Adjusting GAIN

NOTE: This should only be performed in a traffic free environment at speeds of approximately 20–25 mph (30–40 km/h).

1. Make sure the trailer brakes are in good working condition, functioning normally, and properly adjusted. See your trailer dealer if necessary.
2. Hook up the trailer and make the electrical connections according to the trailer manufacturer's instructions.
3. When a trailer with electric/EOH brakes is plugged in, the trailer connected message should appear in the EVIC (if the connection is not recognized by the ITBM, braking functions will not be available), the GAIN setting will illuminate and the correct type of trailer must be selected from the EVIC options.

4. Press the UP or DOWN button on the steering wheel until “TRAILER TOW” appears on the screen.
5. Press the RIGHT arrow on the steering wheel to enter “TRAILER TOW”.
6. Press the UP or DOWN buttons until Trailer Brake Type appears on the screen.

NOTE: 1500 Models Only – Light Electric and Heavy Electric will only be available due to the tow capacities of the vehicle.

7. Press the RIGHT arrow and then press the UP or DOWN buttons until the proper Trailer Brake Type appears on the screen.
8. In a traffic-free environment, tow the trailer on a dry, level surface at a speed of 20–25 mph (30–40 km/h) and squeeze the manual brake control lever completely.
9. If the trailer wheels lockup (indicated by squealing tires), reduce the GAIN setting; if the trailer wheels turn freely, increase the GAIN setting.

Repeat Steps 8 and 9 until the GAIN setting is at a point just below trailer wheel lockup. If towing a heavier trailer, trailer wheel lockup may not be attainable even with the maximum GAIN setting of 10.

	Light Electric	Heavy Electric	Light EOH	Heavy EOH
Type of Trailer Brakes	Electric Trailer Brakes	Electric Trailer Brakes	Electric over Hydraulic Trailer Brakes	Electric over Hydraulic Trailer Brakes
Load	*Under 10,000 lbs	*Above 10,000 lbs	*Under 10,000 lbs	*Above 10,000lbs

* The suggested selection depends and may change depending on the customer preferences for braking performance. Condition of the trailer brakes, driving and road state may also affect the selection.

EVIC Display Messages

The trailer brake control interacts with the Electronic Vehicle Information Center (EVIC). Display messages, along with a single chime, will be displayed when a malfunction is determined in the trailer connection, trailer brake control, or on the trailer. Refer to "Electronic Vehicle Information Center" in "Understanding Your Instrument Panel" for further information.

CAUTION!

Connecting a trailer that is not compatible with the ITBM system may result in reduced or complete loss of trailer braking. There may be a increase in stopping distance or trailer instability which could result in damage to your vehicle, trailer, or other property.

WARNING!

Connecting a trailer that is not compatible with the ITBM system may result in reduced or complete loss of trailer braking. There may be a increase in stopping distance or trailer instability which could result in personal injury.

NOTE:

- An aftermarket controller may be available for use with trailers with air or electric-over-hydraulic trailer brake systems. To determine the type of brakes on your trailer and the availability of controllers, check with your trailer manufacturer or dealer.
- Removal of the ITBM will cause errors and it may cause damage to the electrical system and electronic modules of the vehicle. See your authorized dealer if an aftermarket module is to be installed.

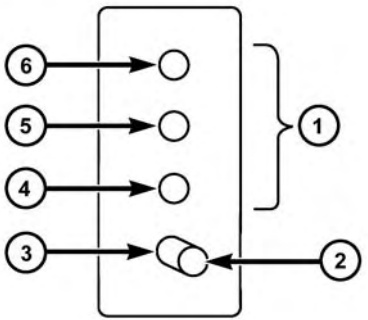
Towing Requirements – Trailer Lights And Wiring

Whenever you pull a trailer, regardless of the trailer size, stoplights and turn signals on the trailer are required for motoring safety.

The Trailer Tow Package may include a four- and seven-pin wiring harness. Use a factory approved trailer harness and connector.

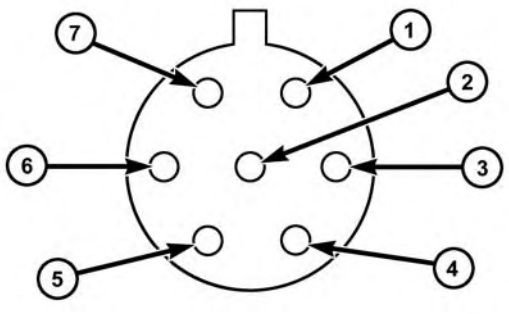
NOTE: Do not cut or splice wiring into the vehicles wiring harness.

The electrical connections are all complete to the vehicle but you must mate the harness to a trailer connector. Refer to the following illustrations.



Four-Pin Connector

1 — Female Pins
2 — Male Pin
3 — Ground
4 — Park
5 — Left Stop/Turn
6 — Right Stop/Turn



Seven-Pin Connector

1 — Battery
2 — Backup Lamps
3 — Right Stop/Turn
4 — Electric Brakes
5 — Ground
6 — Left Stop/Turn
7 — Running Lamps

Towing Tips

Before setting out on a trip, practice turning, stopping and backing the trailer up in an area away from heavy traffic.

Automatic Transmission

The "DRIVE" range can be selected when towing. The transmission controls include a drive strategy to avoid frequent shifting when towing. However, if frequent shifting does occur while in DRIVE, select "TOW/HAUL" mode or select a lower gear range (using the Electronic Range Select (ERS) switches).

NOTE: Using "TOW/HAUL" mode or selecting a lower gear range (using the ERS switches) while operating the vehicle under heavy loading conditions will improve performance and extend transmission life by reducing excessive shifting and heat build up. This action will also provide better engine braking.

When towing a loaded trailer up steep grades at low speeds (20 mph [32 km/h] or below), holding your vehicle in first gear (using the ERS switches) can help to avoid transmission overheating.

If you regularly tow a trailer for more than 45 minutes of continuous operation, then change the automatic transmission fluid and filter(s) as specified for ″police, taxi, fleet, or frequent trailer towing.″. Refer to "Maintenance Schedule" for the proper maintenance intervals.

NOTE: Check the automatic transmission fluid level before towing (6-speed automatic only).

Tow/Haul Mode

To reduce potential for automatic transmission overheating, turn the "TOW/HAUL" feature ON when driving in hilly areas, or select a lower gear range (using the Electronic Range Select (ERS) switches) on more severe grades.

Electronic Speed Control – If Equipped

- Do not use in hilly terrain or with heavy loads.
- When using the speed control, if you experience speed drops greater than 10 mph (16 km/h), disengage until you can get back to cruising speed.
- Use speed control in flat terrain and with light loads to maximize fuel efficiency.

Cooling System

To reduce potential for engine and transmission overheating, take the following actions:

City Driving

When stopped for short periods of time, shift the transmission into NEUTRAL and increase engine idle speed.

Highway Driving

Reduce speed.

Air Conditioning

Turn off temporarily.

Air Suspension System

To aid in attaching/detaching the trailer from the vehicle, the air suspension system can be used. Refer to "Air Suspension System" in "Starting and Operating" for further information.

NOTE: The vehicle must remain in the engine running position while attaching a trailer for proper leveling of the air suspension system.

DIESEL EXHAUST FLUID

Your vehicle is equipped with a Selective Catalytic Reduction system in order to meet the very stringent diesel emissions standards required by the Environmental Protection Agency. Selective Catalytic Reduction (SCR) is the

first and only technology in decades to be as good for the environment as it is good for business and vehicle performance.

The purpose of the SCR system is to reduce levels of NOx (oxides of nitrogen emitted from engines) that are harmful to our health and the environment to an almost near-zero level. Small quantities of Diesel Exhaust Fluid (DEF) are injected into the exhaust upstream of a catalyst where, when vaporized, convert smog-forming nitrogen oxides (NOx) into harmless nitrogen (N2) and water vapor (H2O), two natural components of the air we breathe. You can operate with the comfort that your vehicle is contributing to a cleaner, healthier world environment for this and generations to come.

System Overview

This vehicle is equipped with a Diesel Exhaust Fluid (DEF) injection system and a Selective Catalytic Reduction (SCR) catalyst to meet the emission requirements.

The DEF injection system consists of the following components:

- DEF tank
- DEF pump
- DEF injector
- Electronically-heated DEF lines
- NOx sensors
- Temperature sensors
- SCR catalyst

The DEF injection system and SCR catalyst enable the achievement of diesel emissions requirements; while maintaining outstanding fuel economy, drivability, torque and power ratings.

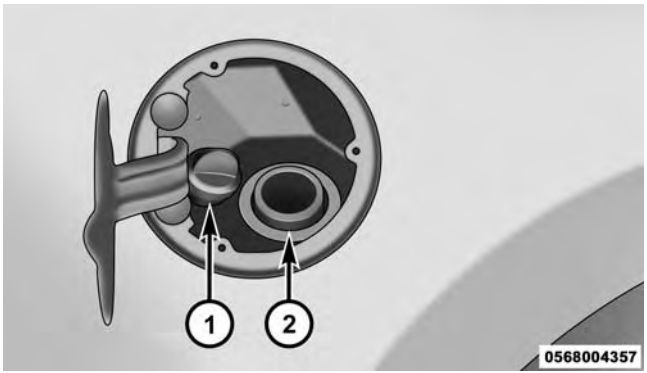
Refer to "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for system messages and warnings.

NOTE:

- Your vehicle is equipped with a DEF injection system. You may occasionally hear an audible clicking noise from under the vehicle at a stop. This is normal operation.
- The DEF pump will run for a period of time after engine shutdown to purge the DEF system. This is normal operation and may be audible from the rear of the vehicle.

ADDING FUEL – 1500 DIESEL MODELS

1. Open the fuel filler door.



Diesel Fuel and Diesel Exhaust Fluid Fill Location

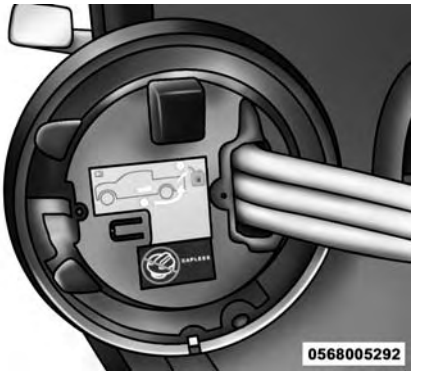
1 — Diesel Exhaust Fluid Fill Location
2 — Diesel Fuel Fill Location

2. There is no fuel filler cap. A flapper door inside the filler pipe seals the system.
3. Insert the fuel nozzle fully into the filler pipe – the nozzle opens and holds the flapper door while refueling.
4. Fill the vehicle with fuel – when the fuel nozzle "clicks" or shuts off the fuel tank is full.
5. Remove the fuel nozzle and close the fuel door.

Emergency Fuel Can Refueling

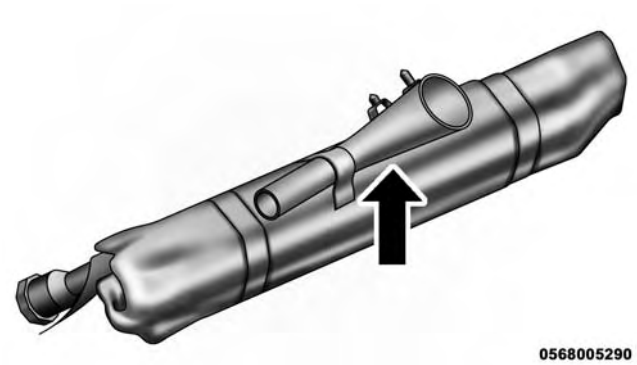
Most fuel cans will not open the flapper door.

A funnel is provided to open the flapper door to allow emergency refueling with a fuel can.



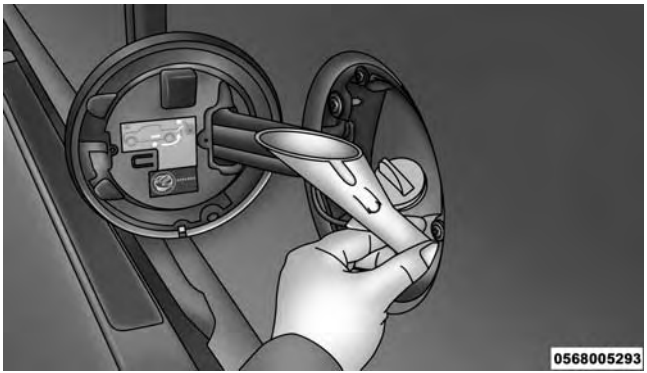
Diesel Fuel and DEF Fluid Filler Door

1. Retrieve fuel funnel from the jack kit located under the front passenger seat.



Fuel Fill Funnel Location 1500 Models

2. Insert funnel into same filler pipe opening as the fuel nozzle.



Emergency Fuel Fill Location

3. Ensure funnel is inserted fully to hold flapper door open.
4. Pour fuel into funnel opening.
5. Remove funnel from filler pipe, clean off prior to putting back in the jack kit.

CAUTION!

To avoid fuel spillage and overfilling, do not "top off" the fuel tank after filling.

WARNING!

- **Never have any smoking materials lit in or near the vehicle when the fuel door is open or the tank is being filled.**
- **Never add fuel when the engine is running. This is in violation of most state and federal fire regulations and may cause the "Malfunction Indicator Light" to turn on.**
- **A fire may result if fuel is pumped into a portable container that is inside of a vehicle. You could be burned. Always place fuel containers on the ground while filling.**

Avoid Using Contaminated Fuel

Fuel that is contaminated by water or dirt can cause severe damage to the engine fuel system. Proper maintenance of the engine fuel filter and fuel tank is essential. Refer to "Maintenance Procedures" in "Maintaining Your Vehicle" for further information.

Bulk Fuel Storage – Diesel Fuel

If you store quantities of fuel, good maintenance of the stored fuel is also essential. Fuel contaminated with water will promote the growth of "microbes." These microbes form "slime" that will clog fuel filters and lines. Drain condensation from the supply tank and change the line filter on a regular basis.

NOTE: When a diesel engine is allowed to run out of fuel, air is pulled into the fuel system.

If the vehicle will not start, refer to "Maintenance Procedures/Priming If The Engine Has Run Out Of Fuel" in "Maintaining Your Vehicle" for further information.

WARNING!

Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.

Diesel Exhaust Fluid Storage

Diesel Exhaust Fluid (DEF) is considered a very stable product with a long shelf life. If DEF is kept in temperatures between 10° to 90°F (-12° to 32°C), it will last a minimum of one year.

DEF is subject to freezing at the lowest temperatures. For example, DEF may freeze at temperatures at or below 12° F (-11° C). The system has been designed to operate in this environment.

NOTE: When working with DEF, it is important to know that:

- Any containers or parts that come into contact with DEF must be DEF compatible (plastic or stainless steel). Copper, brass, aluminum, iron or non-stainless steel should be avoided as they are subject to corrosion by DEF.
- If DEF is spilled, it should be wiped up completely.

Adding Diesel Exhaust Fluid

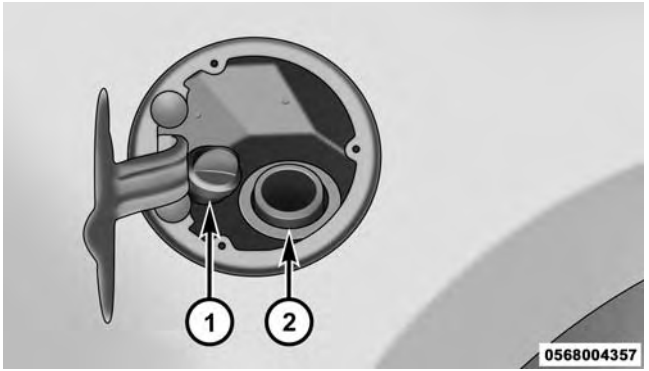
The DEF gauge (located on the instrument cluster) will display the level of DEF remaining in the tank. Refer to "Instrument Cluster" and "Instrument Cluster Descriptions" in "Understanding Your Instrument Panel" for further information.

NOTE: Driving conditions (altitude, vehicle speed, load, etc.) will effect the amount of DEF that is used in your vehicle.

DEF Fill Procedure

NOTE: Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for the correct fluid type.

1. Remove cap from DEF tank (located on drivers side of the vehicle or in fuel door).



DEF Filler Cap and Fuel Fill 1500/2500/3500 Models

1 — Diesel Exhaust Fluid Fill Location
2 — Fuel Fill Location

2. Insert DEF fill adapter/nozzle into DEF tank filler neck.

CAUTION!

- **To avoid DEF spillage, and possible damage to the DEF tank from overfilling, do not "top off" the DEF tank after filling.**
- **DO NOT OVERFILL. DEF will freeze below 12 degrees F (-11 degrees C). The DEF system is designed to work in temperatures below the DEF freezing point, however, if the tank is overfilled and freezes, the system could be damaged.**
- **When DEF is spilled, clean the area immediately with water or use an absorbent material to soak up and spills on the ground.**
- **Do not attempt to start your engine if DEF is accidentally added to the diesel fuel tank as it can result in severe damage to your engine, including but not limited to failure of the fuel pump and injectors.**

3. Stop filling the DEF tank immediately when any of the following happen: DEF stops flowing from the fill bottle into the DEF tank, DEF splashes out the filler neck, or a DEF pump nozzle automatically shuts off.
4. Reinstall cap onto DEF tank.

Filling the DEF tank in cold climates

Since DEF will begin to freeze at 12°F (-11°C), your vehicle is equipped with an automatic DEF heating system. This allows the DEF injection system to operate properly at temperatures below 12°F (-11°C). If your vehicle is not in operation for an extended period of time with temperatures below 12°F (-11°C), the DEF in the tank may freeze. If the tank is overfilled and freezes, it could be damaged. Therefore, do not overfill the DEF tank.

Extra care should be taken when filling with portable containers to avoid overfilling. Note the level of the DEF gauge in your instrument cluster. On pickup applications, you may safely add a maximum of 2 gallons of DEF from portable containers when your DEF gauge is reading ½ full.

MAINTAINING YOUR VEHICLE

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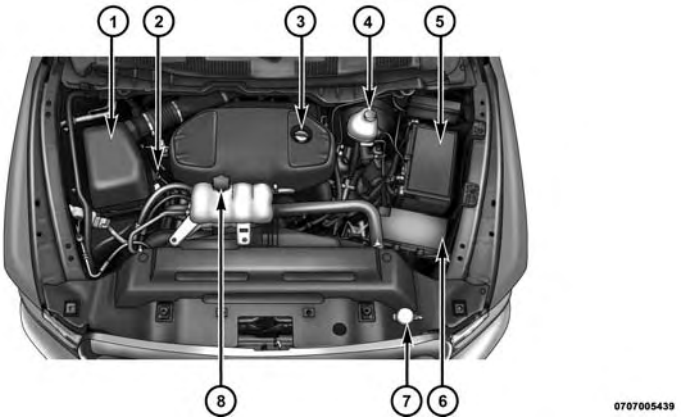
ENGINE COMPARTMENT — 3.0L DIESEL



1 — Air Cleaner Filter
2 — Engine Oil Dipstick
3 — Engine Oil Fill
4 — Brake Fluid Reservoir
5 — Battery
6 — Power Distribution Center (PDC)
7 — Washer Fluid Reservoir
8 — Engine Coolant

MAINTENANCE PROCEDURES

The pages that follow contain the **required** maintenance services determined by the engineers who designed your vehicle.

Besides those maintenance items specified in the fixed maintenance schedule, there are other components which may require servicing or replacement in the future.

CAUTION!

- **Failure to properly maintain your vehicle or perform repairs and service when necessary could result in more costly repairs, damage to other components or negatively impact vehicle performance. Immediately have potential malfunctions examined by an authorized Chrysler Group LLC dealership or qualified repair center.**

(Continued)

CAUTION! ***(Continued)***

- **Your vehicle has been built with improved fluids that protect the performance and durability of your vehicle and also allow extended maintenance intervals. Do not use chemical flushes in these components as the chemicals can damage your engine, transmission, power steering or air conditioning. Such damage is not covered by the New Vehicle Limited Warranty. If a flush is needed because of component malfunction, use only the specified fluid for the flushing procedure.**

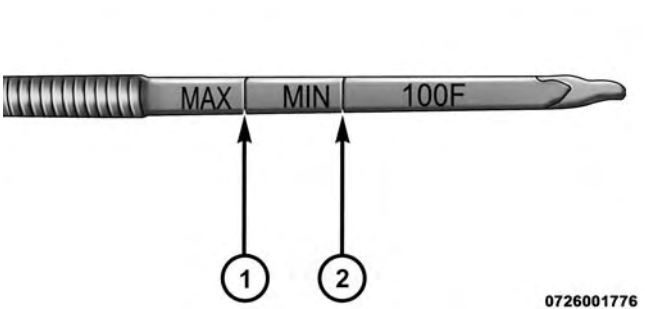
Engine Oil

Engine Oil Selection

For best performance and maximum protection under all types of operating conditions, the manufacturer recommends engine oils that meet the requirements of Chrysler Material Standard MS-11106, and that are approved to Fiat 9.55535-S1 or Fiat 9.55535-S3 and ACEA C3.

Checking Oil Level

To assure proper lubrication of your vehicle's engine, the engine oil must be maintained at the correct level. Check the oil level at regular intervals. The best time to check the oil level is before starting the engine after it has been parked overnight. When checking oil after operating the engine, first ensure the engine is at full operating temperature, then wait for 30 minutes after engine shutdown to check the oil.



1 — MAX Mark
2 — MIN Mark

Checking the oil while the vehicle is on level ground will improve the accuracy of the oil level readings. Add oil only when the level on the dipstick is below the "MIN"

mark. The total capacity from the MIN mark to the MAX mark is 1.3 qts (1.2 L).

CAUTION!

Overfilling or underfilling the crankcase will cause oil aeration or loss of oil pressure. This could damage your engine.

NOTE: It is possible for your oil level to be slightly higher than a previous check. This would be due to diesel fuel that may temporarily be in the crankcase due to operation of the diesel particulate filter regeneration strategy. This fuel will evaporate out under normal operation.

Never operate the engine with oil level below the "MIN" mark or above the upper "MAX" mark.

Change Engine Oil

Refer to the "Maintenance Schedule" for the proper maintenance intervals.

Engine Oil Viscosity (SAE Grade)

CAUTION!

Your vehicle is equipped with an advanced technology Diesel Engine and an emission device designed to limit Diesel Particulate Emissions from being released into the atmosphere. The durability of your engine and life expectancy of this diesel particulate filter emission device is highly dependent on the use of the correct engine oil.

Only use SAE 5W-30 Synthetic Low Ash engine oil which recommended for all operating temperatures. This engine oil improves low temperature starting and vehicle fuel economy.

The engine oil filler cap also shows the recommended engine oil viscosity for your engine. For information on engine oil filler cap location, refer to the "Engine Compartment" illustration in this section.

Materials Added To Engine Oil

The manufacturer strongly recommends against the addition of any additives (other than leak detection dyes) to the engine oil. Engine oil is an engineered product and its performance may be impaired by supplemental additives.

Engine Oil Filter

Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information. The engine oil filter should be changed at every engine oil change.

Disposing Of Used Engine Oil And Oil Filters

Care should be taken in disposing of used engine oil and oil filters from your vehicle. Used oil and oil filters, indiscriminately discarded, can present a problem to the environment. Contact your authorized dealer, service station or governmental agency for advice on how and where used oil and oil filters can be safely discarded in your area.

Engine Air Cleaner Filter

Refer to the "Maintenance Schedule" for the proper maintenance intervals.

CAUTION!

All air entering the engine intake must be filtered. The abrasive particles in unfiltered air will cause rapid wear to engine components.

WARNING!

The air induction system (air cleaner, hoses, etc.) can provide a measure of protection in the case of engine backfire. Do not remove the air induction system (air cleaner, hoses, etc.) unless such removal is necessary for repair or maintenance. Make sure that no one is near the engine compartment before starting the vehicle with the air induction system (air cleaner, hoses, etc.) removed. Failure to do so can result in serious personal injury.

CAUTION!

Many aftermarket performance air filter elements do not adequately filter the air entering the engine. Use of such filters can severely damage your engine.

Engine Air Cleaner Filter Selection

The quality of replacement engine air cleaner filters varies considerably. Only high quality filters should be used to assure most efficient service. MOPAR® engine air cleaner filters are a high quality filter and are recommended.

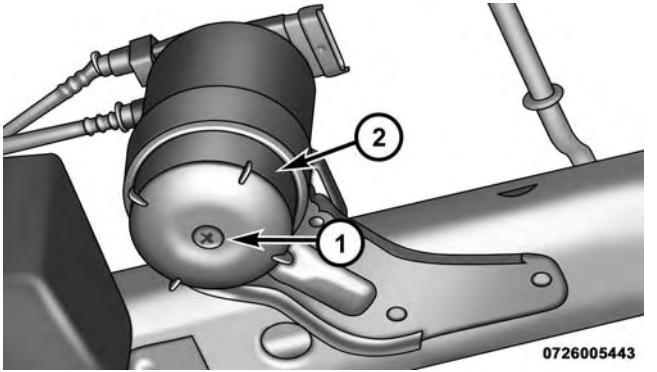
Draining Fuel/Water Separator Filter

The fuel filter/water separator filter housing is located above the rear axle next to the fuel tank. The best access to this water drain valve is from under the vehicle.

CAUTION!

- **Do not drain the fuel/water separator filters when the engine is running.**
- **Diesel fuel will damage blacktop paving surfaces. Drain the filters into an appropriate container.**

If water is detected in the water separator while the engine is running, or while the ignition switch is in the ON position, the "Water In Fuel Indicator Light" will illuminate and an audible chime will be heard. At this point you should stop the engine and drain the water from the filter housing.



Fuel Filter Assembly

1 — Water in Fuel Drain
2 — Fuel Filter Access

CAUTION!

If the "Water In Fuel Indicator Light" remains on, DO NOT START the engine before you drain water from the fuel filters to avoid engine damage.

If the "Water In Fuel Indicator Light" comes on and a single chime is heard while you are driving, or with the ignition in the ON position, there may be a problem with your water separator wiring or sensor. See your authorized dealer for service.

Upon proper draining of the water from the fuel filter, the "Water In Fuel Indicator Light" will remain illuminated for approximately 10 seconds. If the water was drained while the engine was running, the "Water In Fuel Indicator Light" may remain on for approximately three minutes.

NOTE: Care should be taken in disposing of used fluids from your vehicle. Used fluids, indiscriminately discarded, can present a problem to the environment. Contact an authorized dealer, service station, or government agency for advice on recycling programs and for where used fluids and filters can be properly disposed of in your area.

Drain the fuel/water separator filter when the "Water In Fuel Indicator Light" is ON. Within 10 minutes of vehicle shutdown, turn the filter drain valve (located on the bottom of the filter housing) counterclockwise to drain fuel/water, then turn the ignition switch to the ON position, and allow any accumulated water to drain. Leave the drain valve open until all water and contaminants have been removed. When clean fuel is visible, close the drain valve by turning it clockwise, and turn the ignition switch to OFF.

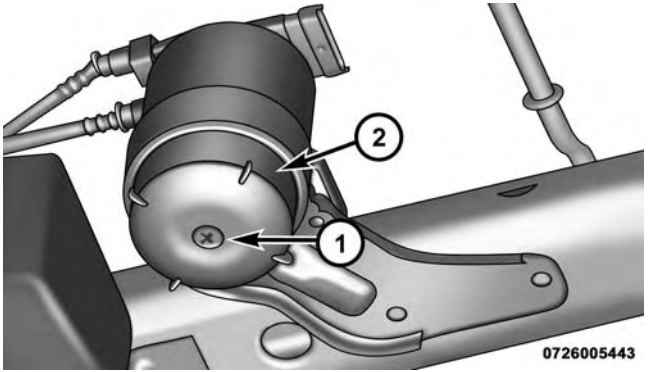
If more than two ounces or 60 milliliters of fuel have been drained, follow the directions for "Priming If The Engine Has Run Out Of Fuel."

Underbody Mounted Fuel Filter Replacement

NOTE: Using a fuel filter that does not meet the manufacturer's filtration and water separating requirements can severely impact fuel system life and reliability.

CAUTION!

- **Diesel fuel will damage blacktop paving surfaces. Drain the filter into an appropriate container.**
- **Do not prefill the fuel filter when installing a new fuel filter. There is a possibility debris could be introduced into the fuel filter during this action. It is best to install the filter dry and allow the in-tank lift pump to prime the fuel system.**



Fuel Filter Assembly

1 — Water in Fuel Drain
2 — Fuel Filter Access

1. Turn engine off.
2. Place a drain pan under the fuel filter assembly.

3. Open the water drain valve, and let any accumulated water drain.
4. Close the water drain valve.
5. Remove bottom cover using a strap wrench. Rotate counterclockwise for removal. Remove the used o-ring and discard it.
6. Remove the used filter cartridge from the housing and dispose of it according to your local regulations.
7. Wipe the sealing surfaces of the lid and housing clean.
8. Install a new o-ring into the ring groove on the filter housing and lubricate with clean engine oil.

NOTE: WIF (Water In Fuel) sensor is re-usable. Service kit comes with new o-ring for filter canister and WIF (Water In Fuel) sensor.

Priming If The Engine Has Run Out Of Fuel

WARNING!

Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.

1. Add a substantial amount of fuel to the tank, approximately 2 to 5 gal (8L to 19L).
2. Press ignition switch twice without your foot on brake to put vehicle in Run position. This will activate the in tank fuel pump for approximately 30 seconds. Repeat this process twice.
3. Start the engine using the “Normal Starting” procedure. Refer to “Starting Procedures” in “Starting and Operating” for further information.

CAUTION!

The starter motor will engage for approximately 30 seconds at a time. Allow two minutes between the cranking intervals.

NOTE: The engine may run rough until the air is forced from all the fuel lines.

WARNING!

Do not use alcohol or gasoline as a fuel blending agent. They can be unstable under certain conditions and be hazardous or explosive when mixed with diesel fuel.

CAUTION!

Due to lack of lubricants in alcohol or gasoline, the use of these fuels can cause damage to the fuel system.

NOTE:

- We recommend you use a blend of up to 5% biodiesel, that meets ASTM specification D-6751 with your diesel engine. Use of biodiesel mixture in excess of 20% can negatively impact the fuel filter's ability to separate water from the fuel, resulting in high pressure fuel system corrosion or damage.
- In addition, commercially available fuel additives are not necessary for the proper operation of your diesel engine.

Intervention Regeneration Strategy – EVIC Message Process Flow

This engine meets all required EPA diesel engine emissions standards. To achieve these emissions standards, your vehicle is equipped with a state-of-the-art engine and exhaust system. These systems are seamlessly integrated into your vehicle and managed by the Powertrain Control Module (PCM). The PCM manages engine combustion to allow the exhaust system's catalyst to trap and burn Particulate Matter (PM) pollutants, with no input or interaction on your part.

Additionally, your vehicle has the ability to alert you to additional maintenance required on your vehicle or engine. Refer to the following messages that may be displayed on your Electronic Vehicle Information Center (EVIC):

WARNING!

A hot exhaust system can start a fire if you park over materials that can burn. Such materials might be grass or leaves coming into contact with your exhaust system. Do not park or operate your vehicle in areas where your exhaust system can contact anything that can burn.

Perform Service

Your vehicle will require emissions maintenance at a set interval. To help remind you when this maintenance is due, the Electronic Vehicle Information Center (EVIC) will display "Perform Service". When the "Perform Service" message is displayed on the EVIC it is necessary to have the emissions maintenance performed. The procedure for clearing and resetting the "Perform Service" indicator message is located in the appropriate Service Information.

Exhaust System – Regeneration Required Now

"Exhaust Filter XX% Full Safely Drive at Highway Speeds to Remedy" will be displayed on the Electronic Vehicle Information Center (EVIC) if the exhaust particulate filter reaches 80% of its maximum storage capacity. Under conditions of exclusive short duration and low speed driving cycles, your diesel engine and exhaust after-treatment system may never reach the conditions required to cleanse the filter to remove the trapped PM. If this occurs, the "Exhaust Filter XX% Full Safely Drive at Highway Speeds to Remedy" message will be displayed in the EVIC. If this message is displayed, you will hear one chime to assist in alerting you of this condition.

By simply driving your vehicle at highway speeds for up to 20 minutes, you can remedy the condition in the particulate filter system and allow your diesel engine and exhaust after-treatment system to cleanse the filter to remove the trapped PM and restore the system to normal operating condition.

Exhaust System – Regeneration In Process Exhaust Filter XX% Full

Indicates that the Diesel Particulate Filter (DPF) is self-cleaning. Maintain your current driving condition until regeneration is completed.

Exhaust System – Regeneration Completed

Indicates that the Diesel Particulate Filter (DPF) self-cleaning is completed. If this message is displayed, you will hear one chime to assist in alerting you of this condition.

Exhaust Service Required – See Dealer Now

Regeneration has been disabled due to a system malfunction. At this point the engine Powertrain Control Module (PCM) will register a fault code, the instrument panel will display a MIL light.

CAUTION!

See your authorized dealer, as damage to the exhaust system could occur soon with continued operation.

Exhaust Filter Full – Power Reduced See Dealer

The PCM derates the engine in order to limit the likelihood of permanent damage to the after-treatment system. If this condition is not corrected and a dealer service is not performed, extensive exhaust after-treatment damage can occur. In order to correct this condition it will be necessary to have your vehicle serviced by your local authorized dealer.

CAUTION!

See your authorized dealer, as damage to the exhaust system could occur soon with continued operation.

Maintenance-Free Batteries

Your vehicle is equipped with a maintenance-free battery. The top of the maintenance-free battery is permanently sealed. You will never have to add water, nor is periodic maintenance required.

CAUTION!

It is essential when replacing the cables on the battery that the positive cable is attached to the positive post and the negative cable is attached to the negative post. Battery posts are marked (+) positive and negative (-) and are identified on the battery

(Continued)

CAUTION! *(Continued)*

case. Also, if a "fast charger" is used while the battery is in vehicle, disconnect both vehicle battery cables before connecting the charger to the battery. Do not use a "fast charger" to provide starting voltage.

WARNING!

Battery posts, terminals, and related accessories contain lead and lead compounds. Always wash hands after handling the battery.

Cooling System

WARNING!

You or others can be badly burned by hot engine coolant (antifreeze) or steam from your radiator. If

(Continued)

WARNING! *(Continued)*

you see or hear steam coming from under the hood, do not open the hood until the radiator has had time to cool. Never try to open a cooling system pressure cap when the radiator is hot.

Engine Coolant Checks

Check the engine coolant (antifreeze) protection every 12 months (before the onset of freezing weather, where applicable). If the engine coolant (antifreeze) is dirty or rusty in appearance, the system should be drained, flushed and refilled with fresh coolant. Check the front of the A/C condenser (if equipped) or radiator for any accumulation of bugs, leaves, etc. If dirty, clean by gently spraying water from a garden hose vertically down the face of the A/C condenser (if equipped) or the back of the radiator core.

Check the engine cooling system hoses for brittle rubber, cracking, tears, cuts and tightness of the connection at the coolant recovery bottle and radiator. Inspect the entire system for leaks.

With the engine at normal operating temperature (but not running), check the cooling system pressure cap for proper vacuum sealing by draining a small amount of engine coolant (antifreeze) from the radiator drain cock. The radiator drain cock is located in the lower radiator tank. If the cap is sealing properly, the engine coolant (antifreeze) will begin to drain from the coolant expansion bottle. DO NOT REMOVE THE COOLANT PRESSURE CAP WHEN THE COOLING SYSTEM IS HOT.

Cooling System – Drain, Flush, And Refill

If the engine coolant (antifreeze) is dirty or contains a considerable amount of sediment, clean and flush with a reliable cooling system cleaner. Follow with a thorough rinsing to remove all deposits and chemicals. Properly dispose of old engine coolant (antifreeze).

Refer to the "Maintenance Schedule" for the proper maintenance intervals.

Selection Of Coolant

Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information.

CAUTION!

- **Mixing of engine coolant (antifreeze) other than specified Organic Additive Technology (OAT) engine coolant (antifreeze), may result in engine damage and may decrease corrosion protection. Organic Additive Technology (OAT) engine coolant is different and should not be mixed with Hybrid Organic Additive Technology (HOAT) engine coolant (antifreeze) or any "globally compatible" coolant (antifreeze). If a non-OAT engine coolant (antifreeze) is introduced into the cooling system in an emergency, the cooling system will need to be drained, flushed, and refilled with fresh OAT coolant (conforming to MS-12106), by an authorized dealer as soon as possible.**

(Continued)

CAUTION! *(Continued)*

- **Do not use water alone or alcohol-based engine coolant (antifreeze) products. Do not use additional rust inhibitors or antirust products, as they may not be compatible with the radiator engine coolant and may plug the radiator.**
- **This vehicle has not been designed for use with propylene glycol-based engine coolant (antifreeze). Use of propylene glycol-based engine coolant (antifreeze) is not recommended.**

Adding Coolant

Your vehicle has been built with an improved engine coolant (OAT coolant conforming to MS-12106) that allows extended maintenance intervals. This engine coolant (antifreeze) can be used up to ten years or 150,000 miles (240,000 km) before replacement. To prevent reducing this extended maintenance period, it is important that you use the same engine coolant (OAT coolant conforming to MS-12106) throughout the life of your vehicle.

Please review these recommendations for using Organic Additive Technology (OAT) engine coolant (antifreeze) that meets the requirements of Chrysler Material Standard MS-12106. When adding engine coolant (antifreeze):

- We recommend using MOPAR® Antifreeze/Coolant 10 Year/150,000 Mile Formula OAT (Organic Additive Technology) that meets the requirements of Chrysler Material Standard MS-12106.
- Mix a minimum solution of 50% OAT engine coolant that meets the requirements of Chrysler Material Standard MS-12106 and distilled water. Use higher concentrations (not to exceed 70%) if temperatures below –34° F (–37° C) are anticipated.
- Use only high purity water such as distilled or deionized water when mixing the water/engine coolant (antifreeze) solution. The use of lower quality water will reduce the amount of corrosion protection in the engine cooling system.

Please note that it is the owner's responsibility to maintain the proper level of protection against freezing according to the temperatures occurring in the area where the vehicle is operated.

NOTE: Mixing engine coolant (antifreeze) types is not recommended and can result in cooling system damage. If HOAT and OAT coolant are mixed in an emergency, have a authorized dealer drain, flush, and refill with OAT coolant (conforming to MS-12106) as soon as possible.

Cooling System Pressure Cap

The cap must be fully tightened to prevent loss of engine coolant (antifreeze), and to ensure that the engine coolant (antifreeze) will return to the radiator from the coolant expansion bottle.

The cap should be inspected and cleaned if there is any accumulation of foreign material on the sealing surfaces.

WARNING!

- **The warning words "DO NOT OPEN HOT" on the cooling system pressure cap are a safety precaution. Never add engine coolant (antifreeze) when the engine is overheated. Do not loosen or remove the cap to cool an overheated engine. Heat causes pressure to build up in the cooling system. To prevent scalding or injury, do not remove the pressure cap while the system is hot or under pressure.**
- **Do not use a pressure cap other than the one specified for your vehicle. Personal injury or engine damage may result.**

Disposal Of Used Engine Coolant

Used ethylene glycol-based engine coolant (antifreeze) is a regulated substance requiring proper disposal. Check with your local authorities to determine the disposal rules for your community. To prevent ingestion by animals or children, do not store ethylene glycol-based engine coolant (antifreeze) in open containers or allow it to remain in puddles on the ground. If ingested by a child or pet, seek emergency assistance immediately. Clean up any ground spills immediately.

Points To Remember

NOTE: When the vehicle is stopped after a few miles/kilometers of operation, you may observe vapor coming from the front of the engine compartment. This is normally a result of moisture from rain, snow, or high humidity accumulating on the radiator and being vaporized when the thermostat opens, allowing hot engine coolant (antifreeze) to enter the radiator.

If an examination of your engine compartment shows no evidence of radiator or hose leaks, the vehicle may be safely driven. The vapor will soon dissipate.

- Do not overfill the coolant expansion bottle.
- Check the coolant freeze point in the radiator and in the coolant expansion bottle. If engine coolant (antifreeze) needs to be added, the contents of the coolant expansion bottle must also be protected against freezing.
- If frequent engine coolant (antifreeze) additions are required, the cooling system should be pressure tested for leaks.
- Maintain engine coolant (antifreeze) concentration at a minimum of 50% OAT coolant (conforming to MS-12106) and distilled water for proper corrosion protection of your engine which contains aluminum components.

- Make sure that the coolant expansion bottle overflow hoses are not kinked or obstructed.
- Keep the front of the radiator clean. If your vehicle is equipped with air conditioning, keep the front of the condenser clean.
- Do not change the thermostat for Summer or Winter operation. If replacement is ever necessary, install ONLY the correct type thermostat. Other designs may result in unsatisfactory engine coolant (antifreeze) performance, poor gas mileage, and increased emissions.

Charge Air Cooler – Inter-Cooler

The charge air cooler is positioned in front of the radiator and the air conditioner condenser. Air enters the engine through the air cleaner and passes through the turbocharger, where it is pressurized. This pressurized air rapidly reaches high temperature. The air is then directed through a hose to the charge air cooler and through another hose to the intake manifold of the engine. This cooling process enables more efficient burning of fuel resulting in fewer emissions.

To guarantee optimum performance of the system, keep the surfaces of the charge air cooler, condenser and radiator clean and free of debris. Periodically check the hoses leading to and from the charge air cooler for cracks or loose clamps resulting in loss of pressure and reduced engine performance.

Brake System

Brake Master Cylinder – Brake Fluid Level Check

The fluid level of the master cylinder should be checked when performing under the hood service, or immediately if the "Brake System Warning Light" indicates system failure.

The brake master cylinder has a translucent plastic reservoir. On the outboard side of the reservoir, there is a "MAX" mark and an "MIN" mark. The fluid level must be kept within these two marks. Do not add fluid above the full mark because leakage may occur at the cap.

With disc brakes, the fluid level can be expected to fall as the brake linings wear. However, an unexpected drop in fluid level may be caused by a leak and a system check should be conducted.

Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information.

WARNING!

- **Use only manufacturer's recommended brake fluid. Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information. Using the wrong type of brake fluid can severely damage your brake system and/or impair its performance. The proper type of brake fluid for your vehicle is also identified on the original factory installed hydraulic master cylinder reservoir.**

(Continued)

WARNING! *(Continued)*

- **To avoid contamination from foreign matter or moisture, use only new brake fluid or fluid that has been in a tightly closed container. Keep the master cylinder reservoir cap secured at all times. Brake fluid in a open container absorbs moisture from the air resulting in a lower boiling point. This may cause it to boil unexpectedly during hard or prolonged braking, resulting in sudden brake failure. This could result in a accident.**
- **Overfilling the brake fluid reservoir can result in spilling brake fluid on hot engine parts, causing the brake fluid to catch fire. Brake fluid can also damage painted and vinyl surfaces, care should be taken to avoid its contact with these surfaces.**

(Continued)

WARNING! *(Continued)*

- **Do not allow petroleum based fluid to contaminate the brake fluid. Brake seal components could be damaged, causing partial or complete brake failure. This could result in an accident.**

FLUID CAPACITIES

	U.S.	Metric
Fuel (Approximate)		
3.0L Diesel Engine	26 Gallons	98.5 Liters
Engine Oil With Filter		
3.0 Liter Diesel Engine (SAE 5W-30 Synthetic, API Certified Low Ash)	8 Quarts	7.7 Liters
Cooling System		
3.0L Turbo Diesel Engine (MOPAR® Engine Coolant/ Antifreeze 10 Year/150,000 Mile Formula OAT (Organic Additive Technology))	11.6 Quarts	11 Liters

FLUIDS, LUBRICANTS AND GENUINE PARTS

Engine

Component	Fluid, Lubricant, or Genuine Part
Engine Coolant	We recommend you use MOPAR® Antifreeze/Coolant 10 Year/150,000 Mile Formula OAT (Organic Additive Technology).
Engine Oil	We recommend you use ACEA C3 5W-30 engine oil meeting Chrysler material standard MS-11106 or Penzoil Ultra Euro L full sythetic 5W-30 motor oil
Engine Oil Filter	We recommend you use MOPAR® Engine Oil Filters.
Fuel Filters	We recommend you use MOPAR® Fuel Filter. Must meet 3 micron rating. **Using a fuel filter that does not meet the manufacturers filtration and water separating requirements can severely impact fuel system life and reliability.**

Component	Fluid, Lubricant, or Genuine Part
Fuel Selection	Use good quality diesel fuel from a reputable supplier in your vehicle. Federal law requires that you must fuel this vehicle with Ultra Low Sulfur Highway Diesel fuel (15 ppm Sulfur maximum) and prohibits the use of Low Sulfur Highway Diesel fuel (500 ppm Sulfur maximum) to avoid damage to the emissions control system. For most year-round service, No. 2 diesel fuel meeting ASTM specification D-975 Grade S15 will provide good performance. We recommend you use a blend of up to 5% biodiesel, meeting ASTM specification D-6751 with your diesel engine.**This vehicle is compatible with biodiesel blends greater than 5% but no greater than 20% biodiesel meeting ASTM specification D-6751 provided the shortened maintenance intervals are followed as directed.**

Component	Fluid, Lubricant, or Genuine Part
Diesel Exhaust Fluid	MOPAR® Diesel Exhaust Fluid (API Certified) (DEF) or equivalent that has been API Certified to the ISO 22241 standard. Use of fluids not API Certified to ISO 22241 may result in system damage.

NOTE: If the vehicle is exposed to extreme cold (below 20°F or -7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters.

Chassis

Component	Fluid, Lubricant, or Genuine Part
Automatic Transmission	We recommend you only use Mopar® ZF 8&9 Speed ATF™ Automatic Transmission Fluid. Failure to use the correct fluid may affect the function or performance of your transmission.
Transfer Case	We recommend you use MOPAR® BW44–44 Transfer Case Fluid.
Front Axle – 1500 Four-Wheel Drive Models	We recommend you use MOPAR® GL-5 Synthetic Axle Lubricant SAE 75W-85.
Rear Axle	We recommend you use MOPAR® Synthetic Gear Lubricant SAE 75W-140 (MS-8985). Limited-Slip Rear Axles require the addition of 5 oz. (148 ml) MOPAR® Limited Slip Additive (MS-10111).
Brake Master Cylinder	We recommend you use MOPAR® DOT 3 Brake Fluid, SAE J1703 should be used. If DOT 3, SAE J1703 brake fluid is not available, then DOT 4 is acceptable.

MAINTENANCE SCHEDULE

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MAINTENANCE SCHEDULE

Your vehicle is equipped with an automatic oil change indicator system. The oil change indicator system will remind you that it is time to take your vehicle in for scheduled maintenance.

Based on engine operation conditions, the oil change indicator message will illuminate. This means that service is required for your vehicle. Operating conditions such as frequent short-trips, trailer tow, extremely hot or cold ambient temperatures, and Biodiesel fuel usage will influence when the "Oil Change Required" message is displayed. Severe Operating Conditions can cause the change oil message to illuminate as early as 3,500 miles (5,600 km) since last reset. Have your vehicle serviced as soon as possible, within the next 500 miles (805 km).

Your authorized dealer will reset the oil change indicator message after completing the scheduled oil change. If a scheduled oil change is performed by someone other than your authorized dealer, the message can be reset by referring to the steps described under "Electronic Vehicle Information Center (EVIC)/Oil Change Required" in "Understanding Your Instrument Panel" for further information

NOTE: Under no circumstances should oil change intervals exceed 10,000 miles (16,000 km) or twelve months, whichever comes first.

Once A Month Or Before A Long Trip:

- Check engine oil level
- Check windshield washer fluid level
- Check the tire inflation pressures and look for unusual wear or damage
- Check the fluid levels of the coolant reservoir, brake master cylinder, power steering and transmission as needed
- Check function of all interior and exterior lights

Required Maintenance

Refer to the Maintenance Schedules on the following pages for required maintenance.

At Every Oil Change Interval As Indicated By Oil Change Indicator System:
• Change oil and filter.
• Completely fill the Diesel Exhaust Fluid tank.
• Rotate the tires. **Rotate at the first sign of irregular wear, even if it occurs before the oil indicator system turns on.**
• Inspect battery and clean and tighten terminals as required.

At Every Oil Change Interval As Indicated By Oil Change Indicator System:
• Inspect automatic transmission fluid if equipped with dipstick.
• Inspect brake pads, shoes, rotors, drums, hoses and park brake.
• Inspect engine cooling system protection and hoses.
• Inspect exhaust system.
• Inspect engine air cleaner if using in dusty or off-road conditions.

Maintenance Chart – Diesel Fuel Up To B5 Biodiesel

Mileage or time passed (whichever comes first)	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Or Kilometers:	16,000	32,000	48,000	64,000	80,000	96,000	112,000	128,000	144,000	160,000	176,000	192,000	208,000	224,000	240,000
Additional Inspections															
Completely fill the Diesel Exhaust Fluid tank.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inspect the CV joints.			X			X			X			X			X
Inspect front suspension, tie rod ends, and replace if necessary.		X		X		X		X		X		X		X	
Inspect the front and rear axle fluid, change if using your vehicle for police, taxi, fleet, off-road or frequent trailer towing.		X		X		X		X		X		X		X	
Inspect the brake linings, parking brake function.		X		X		X		X		X		X		X	
Inspect transfer case fluid.			X			X			X						X

Mileage or time passed (whichever comes first)	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Or Kilometers:	16,000	32,000	48,000	64,000	80,000	96,000	112,000	128,000	144,000	160,000	176,000	192,000	208,000	224,000	240,000
Additional Maintenance															
Replace fuel filter and drain water from the fuel filter assembly.			X			X			X			X			X
Replace engine air filter.			X			X			X			X			X
Replace the air conditioning filter.		X		X		X		X		X		X		X	
Flush and replace the engine coolant at 10 years or 150,000 miles (240,000 km) whichever comes first.										X					X
Replace accessory drive belt(s).										X					
Change transfer case fluid.												X			

WARNING!

- **You can be badly injured working on or around a motor vehicle. Do only service work for which you have the knowledge and the right equipment. If you have any doubt about your ability to perform a service job, take your vehicle to a competent mechanic.**
- **Failure to properly inspect and maintain your vehicle could result in a component malfunction and effect vehicle handling and performance. This could cause an accident.**

MAINTENANCE SCHEDULE – B6 TO B20 BIODIESEL

NOTE:

- Under no circumstances should oil change intervals exceed 8,000 miles (12 875 km) or six months, whichever comes first when using Biodiesel blends greater than 5% (B5).
- The owner is required to monitor mileage for B6-B20 biodiesel, the automatic oil change indicator system does not reflect the use of biofuels.

Once A Month Or Before A Long Trip:

- Check engine oil level
- Check windshield washer fluid level
- Check the tire inflation pressures and look for unusual wear or damage

- Check the fluid levels of the coolant reservoir, brake master cylinder, power steering and transmission as needed
- Check function of all interior and exterior lights

Required Maintenance

Refer to the Maintenance Schedules on the following pages for required maintenance.

At Every Oil Change Interval As Indicated By Oil Change Indicator System:
• Change oil and filter.
• Completely fill the Diesel Exhaust Fluid tank.
• Rotate the tires. **Rotate at the first sign of irregular wear, even if it occurs before the oil indicator system turns on.**

At Every Oil Change Interval As Indicated By Oil Change Indicator System:
• Inspect battery and clean and tighten terminals as required.
• Inspect automatic transmission fluid if equipped with dipstick.
• Inspect brake pads, shoes, rotors, drums, hoses and park brake.
• Inspect engine cooling system protection and hoses.
• Inspect exhaust system.
• Inspect engine air cleaner if using in dusty or off-road conditions.

Maintenance Chart – B6 to B20 Biodiesel

Mileage or time passed (whichever comes first)	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Or Kilometers:	16,000	32,000	48,000	64,000	80,000	96,000	112,000	128,000	144,000	160,000	176,000	192,000	208,000	224,000	240,000
Additional B6 to B20 Maintenance															
Replace fuel filter and drain water from the fuel filter assembly.		X		X		X		X		X		X		X	

WARNING!

- **You can be badly injured working on or around a motor vehicle. Do only service work for which you have the knowledge and the right equipment. If you have any doubt about your ability to perform a service job, take your vehicle to a competent mechanic.**
- **Failure to properly inspect and maintain your vehicle could result in a component malfunction and effect vehicle handling and performance. This could cause an accident.**

RAM 2500 / 3500 / 4500 / 5500

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INTRODUCTION

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A MESSAGE FROM CHRYSLER GROUP LLC

Chrysler Group LLC and Cummins® welcome you as a Cummins® turbocharged diesel-powered truck owner. Your diesel truck will sound, feel, drive, and operate differently from a gasoline-powered truck. It is important that you read and understand this manual.

Almost 100% of the heavy duty trucks in the United States and Canada are diesel-powered because of the fuel economy, rugged durability, and high torque which permits pulling heavy loads. Cummins® engines power well over half of these trucks. Now this same technology and proven performance is yours in your truck equipped with the Cummins® turbocharged diesel engine.

You may find that some of the starting, operating, and maintenance procedures are different. However, they are simple to follow and careful adherence to them will ensure that you take full advantage of the features of this engine.

NOTE: Some aftermarket products may cause severe engine/transmission and/or exhaust system damage. Your vehicle's Powertrain Control Systems can detect and store information about vehicle modifications that increase horsepower and torque output such as whether or not performance-enhancing powertrain components, commonly referred to as downloaders, power boxes, or performance chips have been used.

This information cannot be erased and will stay in the system's memory even if the modification is removed. This information can be retrieved by Chrysler Group LLC, and service and repair facilities, when servicing your vehicle. This information may be used to determine if repair will be covered by the New Vehicle Limited Warranty.

There is a probability that the use of a "performance chip" will prohibit the engine from starting. In this instance, the vehicle will need to be serviced by a authorized dealer in order to return the vehicle to it's factory settings.

THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

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REMOTE STARTING SYSTEM — IF EQUIPPED

This system uses the Remote Keyless Entry (RKE) transmitter to start the engine conveniently from outside the vehicle while still maintaining security. The system has a range of approximately 300 ft (91 m).

NOTE:

- The vehicle must be equipped with an automatic transmission to be equipped with Remote Start.
- The remote start system will wait for the "Wait To Start" telltale to extinguish before cranking the engine. This allows time for the intake heater to pre-heat the incoming air, and is normal operation in cold weather. Refer to "Electronic Vehicle Information Center/EVIC Warning Lights" in "Understanding Your Instrument Panel" for further information on and "Wait To Start" telltale and pre-heat cycle.

How To Use Remote Start

All of the following conditions must be met before the engine will remote start:

- Shift lever in PARK
- Doors closed
- Hood closed
- HAZARD switch off
- BRAKE switch inactive (brake pedal not pressed)
- Ignition key removed from ignition switch
- Battery at an acceptable charge level
- RKE PANIC button not pressed
- Fuel meets minimum requirement
- Water In Fuel Indicator Light is not illuminated
- Wait To Start Light is not illuminated

WARNING!

- **Do not start or run an engine in a closed garage or confined area. Exhaust gas contains Carbon Monoxide (CO) which is odorless and colorless. Carbon Monoxide is poisonous and can cause serious injury or death when inhaled.**
- **Keep Remote Keyless Entry (RKE) transmitters away from children. Operation of the Remote Start System, windows, door locks or other controls could cause serious injury or death.**

Remote Start Abort Message On Electronic Vehicle Information Center (EVIC) – If Equipped

The following messages will display in the EVIC if the vehicle fails to remote start or exits remote start prematurely:

- Remote Start Aborted - Door Ajar
- Remote Start Aborted - Hood Ajar
- Remote Start Aborted - Fuel Low
- Remote Start Aborted - System Fault

The EVIC message stays active until the ignition is turned to the ON/RUN position.

To Enter Remote Start Mode

Press and release the REMOTE START button on the RKE transmitter twice, within five seconds. The parking lights will flash and the horn will chirp twice (if programmed). In cold ambient

temperature conditions, the diesel vehicle may delay crank up to 30 seconds for the fuel and grid heater. Once the vehicle has started, the engine will run for 15 minutes.

NOTE:

- The park lamps will turn on and remain on during Remote Start mode.
- For security, power window and power sunroof operation (if equipped) are disabled when the vehicle is in the Remote Start mode.
- The engine can be started two consecutive times (two 15-minute cycles) with the RKE transmitter. However, the ignition switch must be cycled to the ON position before you can repeat the start sequence for a third cycle.

To Exit Remote Start Mode Without Driving The Vehicle

Press and release the REMOTE START button one time or allow the engine to run for the entire 15-minute cycle.

NOTE: To avoid unintentional shut downs, the system will disable the one time press of the REMOTE START button for two seconds after receiving a valid Remote Start request.

To Exit Remote Start Mode And Drive The Vehicle

To exit Remote start Mode and Drive the vehicle Before the end of the 15-minute cycle, press and release the unlock button on the RKE transmitter to unlock the door and disarm the Vehicle Security Alarm System (if equipped). Then prior to the end of the 15 minute cycle, insert the Key Fob (if equipped) and rotate to RUN.

NOTE:

- The ignition switch must be in the ON/RUN position in order to drive the vehicle.
- For vehicles equipped with the Electronic Vehicle Information Center (EVIC), the message "Insert Key/ Turn To On" will flash in the EVIC until you insert the Key Fob into the ignition swich. Once inserted, the message "Turn To On" will flash in the EVIC until you turn the ignition switch to the ON/RUN position.

Remote Start Comfort Systems – If Equipped

When remote start is activated, the heated steering wheel, and driver heated seat features will automatically turn on in cold weather. In warm weather, the driver vented seat feature will automatically turn on when the remote start is activated. These features will stay on through the duration of remote start or until the ignition switch is turned to the ON position.

The Remote Start Comfort System can be activated and deactivated through the Electronic Vehicle Information Center (EVIC). For more information on Remote Start Comfort System operation refer to "Electronic Vehicle Information Center (EVIC)/Customer-Programmable Features (System Setup)" in "Understanding Your Instrument Panel".

ENGINE BREAK-IN RECOMMENDATIONS

The Cummins® turbocharged diesel engine does not require a break-in period due to its construction. Normal operation is allowed, providing the following recommendations are followed:

- Warm up the engine before placing it under load.
- Do not operate the engine at idle for prolonged periods.
- Use the appropriate transmission gear to prevent engine lugging.
- Observe vehicle oil pressure and temperature indicators.
- Check the coolant and oil levels frequently.
- Vary throttle position at highway speeds when carrying or towing significant weight.

NOTE: Light duty operation such as light trailer towing or no load operation will extend the time before the engine is at full efficiency. Reduced fuel economy and power may be seen at this time.

For additional vehicle break-in requirements, refer to "Trailer Towing" in "Starting and Operating" of the Owners Manual.

Because of the construction of the Cummins® turbocharged diesel engine, engine run-in is enhanced by loaded operating conditions which allow the engine parts to achieve final finish and fit during the first 6,000 miles (10 000 km).

UNDERSTANDING YOUR INSTRUMENT PANEL

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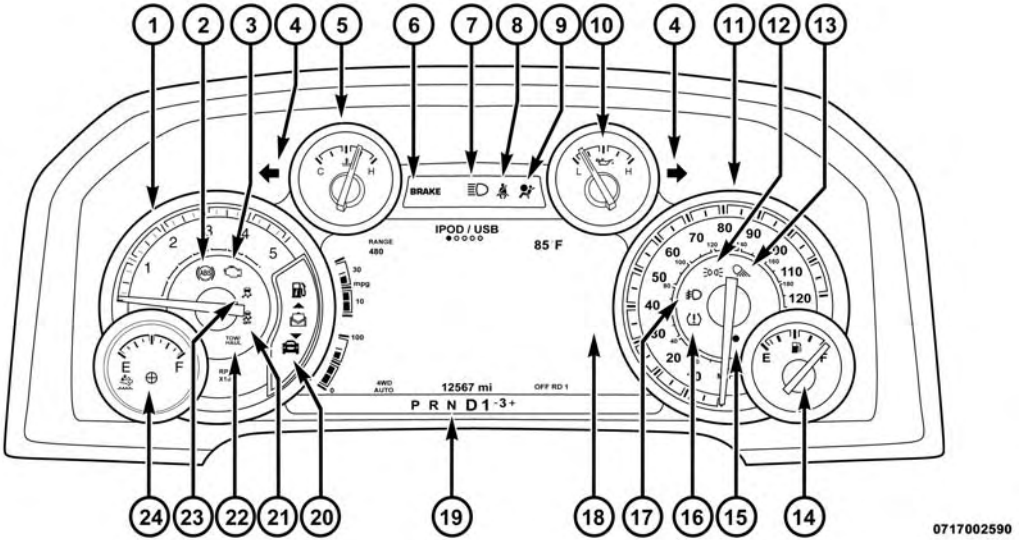
INSTRUMENT CLUSTER



INSTRUMENT CLUSTER DESCRIPTIONS

1. Tachometer

The tachometer indicates engine speed in Revolutions Per Minute (RPM x 1000).

CAUTION!

Do not operate the engine with the tachometer pointer at high RPM for extended periods. Engine operation over 3200 RPM (Redline) can result in significant damage that will not be covered under warranty.

2. Anti-Lock Brake (ABS) Light

This light monitors the Anti-lock Brake System (ABS). The light will turn on when the ignition switch is turned to the ON/RUN position and may stay on for as long as four seconds.

If the ABS light remains on or turns on while driving, it indicates that the anti-lock portion of the brake system is not functioning and that service is required. However, the conventional brake system will continue to operate normally if the BRAKE warning light is not on.

If the ABS light is on, the brake system should be serviced as soon as possible to restore the benefits of anti-lock brakes. If the ABS light does not turn on when the ignition switch is turned to the ON/RUN position, have the light inspected by an authorized dealer.

3. Malfunction Indicator Light (MIL)

The Malfunction Indicator Light (MIL) is part of an onboard diagnostic (OBDII) system which monitors the emissions and engine control system. If the vehicle is ready for emissions testing, the light will come on when the ignition is first turned on and remain on, as a bulb check, until the engine is started. If the vehicle is not ready for emissions testing the light will

come on when the ignition is first turned on and remain on for 15 seconds, then blink for 5 seconds, and remain on until the vehicle is started. If the bulb does not come on during starting, have the condition investigated promptly.

If this light comes on and remains on while driving, it suggests a potential engine control problem and the need for system service.

Although your vehicle will usually be drivable and not need towing, see your authorized dealer for service as soon as possible.

CAUTION!

Prolonged driving with the Malfunction Indicator Light (MIL) on could cause damage to the engine control system. It also could affect fuel economy and drivability. If the MIL is flashing, severe catalytic

(Continued)

CAUTION! *(Continued)*

converter damage and power loss will soon occur. Immediate service is required.

WARNING!

A malfunctioning catalytic converter, as referenced above, can reach higher temperatures than in normal operating conditions. This can cause a fire if you drive slowly or park over flammable substances such as dry plants, wood, cardboard, etc. This could result in death or serious injury to the driver, occupants or others.

4. Turn Signal Indicators

The arrow will flash with the exterior turn signal when the turn signal lever is operated.

NOTE:

A continuous chime will sound if the vehicle is driven more than 1 mile (1.6 km) with either turn signal on.

Check for an inoperative outside light bulb if either indicator remains on and does not flash, or flashes at a rapid rate.

5. Engine Coolant Temperature

This gauge shows the engine coolant temperature. The gauge pointer will likely show higher temperatures when driving in hot weather, up mountain grades, or in heavy stop and go traffic. If the red Warning Light turns on while driving, safely bring the vehicle to a stop, and turn off the engine. DO NOT operate the vehicle until the cause is corrected.

CAUTION!

Driving with a hot engine cooling system could damage your vehicle. If the temperature gauge reads "H" pull over and stop the vehicle. Idle the vehicle with the air conditioner turned off until the pointer drops back into the normal range. If the pointer remains on the "H" and you hear continuous chimes, turn the engine off immediately and call an authorized dealer for service.

WARNING!

A hot engine cooling system is dangerous. You or others could be badly burned by steam or boiling coolant. You may want to call an authorized dealer for service if your vehicle overheats. If you decide to look under the hood yourself, see "Maintaining Your

(Continued)

WARNING! ***(Continued)***

Vehicle." Follow the warnings under the "Cooling System Pressure Cap" paragraph.

6. Brake Warning Light

This light monitors various brake functions, including brake fluid level and parking brake application. If the brake light turns on it may indicate that the parking brake is applied, that the brake fluid level is low, or that there is a problem with the Anti-lock Brake System reservoir.

If the light remains on when the parking brake has been disengaged, and the fluid level is at the full mark on the master cylinder reservoir, it indicates a possible brake hydraulic system malfunction or that a problem with the Brake Booster has been detected by the Anti-Lock Brake System (ABS) / Electronic Stability Control (ESC) system. In this case, the light will remain on until the condition has been corrected. If the problem is related to the brake booster, the ABS pump will run when applying the brake and a brake pedal pulsation may be felt during each stop.

The dual brake system provides a reserve braking capacity in the event of a failure to a portion of the hydraulic system. A leak in either half of the dual brake system is indicated by the Brake Warning Light, which will turn on when the brake fluid level in the master cylinder has dropped below a specified level.

The light will remain on until the cause is corrected.

NOTE: The light may flash momentarily during sharp cornering maneuvers, which change fluid level conditions. The vehicle should have service performed, and the brake fluid level checked.

If brake failure is indicated, immediate repair is necessary.

WARNING!

Driving a vehicle with the red brake light on is dangerous. Part of the brake system may have failed. It will take longer to stop the vehicle. You could have a collision. Have the vehicle checked immediately.

Vehicles equipped with the ABS, are also equipped with Electronic Brake Force Distribution (EBD). In the event of an EBD failure, the Brake Warning Light will turn on along with the ABS Light. Immediate repair to the ABS system is required.

Operation of the Brake Warning Light can be checked by turning the ignition switch from the OFF position to the ON/RUN position. The light should illuminate for approximately two seconds. The light should then turn off unless the parking brake is applied or a brake fault is detected. If the light does not illuminate, have the light inspected by an authorized dealer.

The light also will turn on when the parking brake is applied with the ignition switch in the ON/RUN position.

NOTE: This light shows only that the parking brake is applied. It does not show the degree of brake application.

7. High Beam Indicator

This indicator shows that headlights are on high beam. Push the multifunction lever forward to switch the headlights to high beam, and pull toward yourself (normal position) to return to low beam.

8. Seat Belt Reminder Light

When the ignition switch is first turned to ON/RUN, this light will turn on for four to eight seconds as a bulb check. During the bulb check, if the driver's seat belt is unbuckled, a chime will sound. After the bulb check or when driving, if the driver's seat belt remains unbuckled, the seat belt reminder light will

flash or remain on continuously. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

9. Air Bag Warning Light

This light will turn on for four to eight seconds as a bulb check when the ignition switch is first turned to ON/RUN. If the light is either not on during starting, stays on, or turns on while driving, have the system inspected at an authorized dealer as soon as possible. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

10. Engine Oil Pressure

The pointer should always indicate some oil pressure when the engine is running. A continuous high or low reading under normal driving conditions may indicate a lubrication system malfunction. Immediate service should be obtained from an authorized dealer.

If the gauge pointer moves to either extreme of the gauge, the Check Gauges indicator will illuminate and a single chime will sound.

11. Speedometer

The speedometer shows the vehicle speed in miles per hour and/or kilometers per hour (mph/km/h).

12. Park/Headlight ON Indicator — If Equipped

This indicator will illuminate when the park lights or headlights are turned on.

13. Cargo Light

The cargo light will illuminate when the cargo light is activated by pressing the cargo light button on the headlight switch.

14. Fuel Gauge

Shows level of fuel in tank when ignition switch is in the ON/RUN position.

15. Vehicle Security Light — If Equipped

This light will flash at a fast rate for approximately 15 seconds, when the vehicle security alarm is arming, and then will flash slowly until the vehicle is disarmed.

16. Tire Pressure Monitoring Telltale Light

Each tire, including the spare (if provided), should be checked monthly when cold and inflated to the inflation pressure recommended by the vehicle manufacturer on the vehicle placard or tire inflation pressure label. (If your vehicle has tires of a different size than the size indicated on the vehicle placard or tire inflation pressure label, you should determine the proper tire inflation pressure for those tires.)

As an added safety feature, your vehicle has been equipped with a Tire Pressure Monitoring System (TPMS) that illuminates a low tire pressure telltale when one or more of your tires is significantly under-inflated. Accordingly, when the low tire pressure telltale illuminates, you should stop and check your tires as soon as possible, and inflate them to the proper pressure. Driving on a significantly under-inflated tire causes the tire to overheat and can lead to tire failure. Under-inflation also reduces fuel efficiency and tire tread life, and may affect the vehicle's handling and stopping ability.

Please note that the TPMS is not a substitute for proper tire maintenance, and it is the driver's responsibility to maintain correct tire pressure, even if under-inflation has not reached the level to trigger illumination of the TPMS low tire pressure telltale.

Your vehicle has also been equipped with a TPMS malfunction indicator to indicate when the system is not operating properly. The TPMS malfunction indicator is combined with the low tire pressure telltale. When the system detects a malfunction, the telltale will flash for approximately one minute and then remain continuously illuminated. This sequence will continue upon subsequent vehicle start-ups as long as the malfunction exists. When the malfunction indicator is illuminated, the system may not be able to detect or signal low tire pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of replacement or alternate tires or wheels on the vehicle that prevent the TPMS from functioning properly. Always check the TPMS malfunction telltale after replacing one or more tires or wheels on your vehicle, to ensure that the replacement or alternate tires and wheels allow the TPMS to continue to function properly.

CAUTION!

The TPMS has been optimized for the original equipment tires and wheels. TPMS pressures and warning have been established for the tire size equipped on your vehicle. Undesirable system operation or sensor damage may result when using replacement equipment that is not of the same size, type, and/or style. Aftermarket wheels can cause sensor damage. Do not use tire sealant from a can or balance beads if your vehicle is equipped with a TPMS, as damage to the sensors may result.

NOTE: The TPMS telltale is also accompanied by a "Low Tire" message in the odometer (Base Cluster), or in the Electronic Vehicle Information Center (EVIC) screen indicating "Low Tire" for EVIC enabled clusters.

17. Front Fog Light Indicator — If Equipped

This indicator will illuminate when the front fog lights are on.

18. Electronic Vehicle Information Center (EVIC)

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster. For further information, refer to "Electronic Vehicle Information Center (EVIC)".

19. Transmission Gear Position Indicator

The Transmission Gear Position Indicator is self-contained within the instrument cluster. It displays the gear range of the automatic transmission.

NOTE: The highest available transmission gear is displayed in the lower right corner of the Electronic Vehicle Information Center (EVIC) whenever the Electronic Range Select (ERS) feature is active. Use the +/- selector on the shift lever to activate ERS. Refer to "Automatic Transmission" in "Starting And Operating" for further information.

20. Electronic Vehicle Information Center (EVIC) Menu

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster. For further information, refer to "Electronic Vehicle Information Center (EVIC)".

21. Electronic Stability Control (ESC) OFF Indicator Light — If Equipped

This light indicates that the Electronic Stability Control (ESC) is in Partial Off or Full Off mode.

22. TOW/HAUL

The TOW HAUL button is located on the center stack upper switch bank. This light will illuminate when TOW HAUL mode is selected.

23. Electronic Stability Control (ESC) Activation/ Malfunction Indicator Light — If Equipped

The "ESC Activation/Malfunction Indicator Light" in the instrument cluster will come on when the ignition switch is turned to the ON/RUN position. It should go out with the engine running. If the "ESC Activation/Malfunction Indicator Light" comes on continuously with the engine running, a malfunction has been detected in the ESC system. If this light remains on after several ignition cycles, and the vehicle has been driven several miles (kilometers) at speeds greater than 30 mph (48 km/h), see your authorized dealer as soon as possible to have the problem diagnosed and corrected.

NOTE:

The "ESC Off Indicator Light" and the "ESC Activation/ Malfunction Indicator Light" come on momentarily each time the ignition switch is turned to ON/RUN.

Each time the ignition is turned to ON/RUN, the ESC system will be ON, even if it was turned off previously.

The ESC system will make buzzing or clicking sounds when it is active. This is normal; the sounds will stop when ESC becomes inactive following the maneuver that caused the ESC activation.

24. DEF Gauge

The DEF Gauge displays the actual level of Diesel Exhaust Fluid in the DEF tank. Diesel Exhaust Fluid (DEF) is required to maintain normal vehicle operation and emissions compliance. More information is available

in the Electronic Vehicle Information (EVIC) section under the heading of Diesel Exhaust Fluid (DEF) Warning Messages.

ELECTRONIC VEHICLE INFORMATION CENTER (EVIC)

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster.

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Electronic Vehicle Information Center (EVIC)

This system conveniently allows the driver to select a variety of useful information by pressing the switches mounted on the steering wheel.

Refer to "Electronic Vehicle Information Center – If Equipped" in the Owner's Manual for further information.

Electronic Vehicle Information Center (EVIC) Displays

When the appropriate conditions exist, the Electronic Vehicle Information Center (EVIC) Displays the following messages:

- System Setup Unavailable – Vehicle Not in Park
- System Setup Unavailable – Vehicle in Motion
- Service Air Filter
- Perform Service
- Exhaust Filter XX% Full Safely Drive at Highway Speeds To Remedy
- Exhaust Filter Full – Power Reduced See Dealer
- Exhaust Service Required – See Dealer Now
- Exhaust System – Filter XX% Full Service Required See Dealer
- Exhaust System – Regeneration In Process Exhaust Filter XX% Full
- Exhaust System – Regeneration Completed
- DEF Low Refill Soon
- Speed Limited to 5 MPH in XXX mi Refill DEF
- 5 MPH Max Speed on Restart, Long Idle or Refuel Refill DEF
- 5 MPH Max Speed Refill DEF
- Service DEF System See Dealer
- 5 MPH Max Speed in XXX mi Service DEF System See Dealer
- 5 MPH Max Speed on Restart, Long Idle or Refuel Service DEF See Dealer
- 5 MPH Max Speed Service DEF System See Dealer

- Coolant Low
- Engine Power Reduced During Warmup
- Engine Power Reduced up to 30-sec During Warmup
- Engine Power Reduced up to 2-min During Warmup
- Active Airbox Service Required See Dealer

EVIC Warning Lights

Water In Fuel Indicator Light

The "Water In Fuel Indicator Light" will illuminate when there is water detected in the fuel filters. If this light remains on, DO NOT start the vehicle before you drain the water from the fuel filters to prevent engine damage. Refer to "Maintenance Procedures/ Draining Fuel/Water Separator Filters" in "Maintaining Your Vehicle" for further information.

Wait To Start Light

The "Wait To Start Light" will illuminate when the ignition is turned to the RUN position and the intake manifold temperature is below 66°F (19°C). Wait until the "Wait To Start Light" turns OFF, then start the vehicle. Refer to "Starting Procedures" in "Starting and Operating" for further information.

NOTE: The "Wait To Start Light" may not illuminate if the intake manifold temperature is warm enough.

Low Coolant Level Indicator

This telltale will turn on to indicate the vehicle coolant level is low.

Cold Ambient Derate Mode Messages

The vehicle will display messages when a derate (engine power reduction) is activated to protect the turbocharger during engine start up in cold ambient temperatures.

- **Engine Power Reduced During Warmup** - This message will display during start up when the ambient temperature is between 10° F (-12° C) and -10° F (-23° C).
- **Engine Power Reduced Up To 30 Sec (Seconds) During Warmup** - This message will display during start up when the ambient temperature is between -10° F (-23° C) and -25 F (-32° C).
- **Engine Power Reduced Up To 2 Min (Minutes) During Warmup** - This message will display during start up when the ambient temperature is -25° F (-32° C) and below.
- **Coolant Low** - This telltale will turn on to indicate the vehicle coolant level is low. See "Adding Coolant" under the section "Maintaining Your Vehicle" for more information.

Diesel Exhaust Fluid (DEF) Warning Messages

Your vehicle will begin displaying warning messages when the DEF level reaches a driving range of approximately 350 miles (563 km). If the following warning message sequence is ignored, your vehicle may be limited to a maximum speed of 5 MPH (8 km/H) unless DEF is added.

- **DEF Low Refill Soon** – This message will display when the low level is reached, during vehicle start up, and with increased frequency during vehicle operation. It will be accompanied by a single chime. Approximately 5 gallons (19 Liters) of DEF is required to refill the tank when this message is initially displayed on pickup applications, and approximately 7 gallons (28 Liters) are required on chassis-cab applications.

- **Speed Limited to 5 MPH in XXX mi Refill DEF** – This message will continuously display if the "DEF Low Refill Soon" message is ignored, and the frequency of occurance of the chime will increase unless up to 2 gallons (7.5 Liters) of DEF is added to the tank.
- **5 MPH Max Speed on Restart, Long Idle or Refuel Refill DEF** – This message will continuously display when the counter reaches zero, and will be accompanied by a periodic chime.
- The vehicle will only be capable of a maximum speed of 5 MPH upon the first of the following conditions to occur:
  - If the vehicle is shutoff and restarted.
  - If the vehicle is idled for an extended period of time, approximately one hour or greater.
  - If the system detects that the level of fuel in the tank has increased.
  - Add a minimum of 2 gallons (9.5 Liters) of DEF to the tank in order to avoid vehicle operation at a maximum speed of 5 MPH (8 km/H).
- **5 MPH Max Speed Refill DEF** – The vehicle will only be capable of a maximum speed of 5 MPH (8 km/H) when this message is displayed. Add up to 2.5 gallons (9.5 Liters) of DEF to the tank to restore normal vehicle operation.

NOTE: A minimum of 2 gallons (9.5 Liters) may be required to restore normal vehicle operation. Although the vehicle will start normally and can be placed in gear after this message has been initially displayed, extreme caution should be utilized since the vehicle will only be capable of maneuvering at a maximum speed of 5 MPH (8 km/H).

Diesel Exhaust Fluid (DEF) Fault Warning Messages

There are four different messages which are displayed if the vehicle detects that the DEF system has been filled with a fluid other than DEF, has experienced component failures, or when tampering has been detected. The vehicle may be limited to a maximum speed of 5 MPH (8 km/H) if the DEF system is not serviced within less than 250 miles (402 km) of the fault being detected.

When the DEF system needs to be serviced the following warnings will display:

- **Service DEF System – See Dealer** — This message will display when the fault is initially detected, each time the vehicle is started, and periodically during driving. The message will be accompanied by a single chime. We recommend you drive to your nearest authorized dealer and have your vehicle serviced as soon as possible.
- **5 MPH Max Speed in 150 mi Service DEF System See Dealer** — This message will display if the DEF system has not been serviced after the "Service DEF System – See Dealer" message is displayed. This message will continuously display until the mileage counter reaches zero, and will be accompanied by a periodic chime. The message will continue to countdown until it reaches zero unless the vehicle is serviced. We recommend you drive to your nearest authorized dealer and have your vehicle serviced immediately.

NOTE: Under some circumstances this mileage counter may start with a value of less than 150 miles (241 km). For example, if recurring faults are detected in a time interval of less than 40 hours, the counter may restart at the value where it stopped when a previous fault was temporarily remedied, or at a minimum of 50 miles (80 km).

- **5 MPH Max Speed on Restart, Long Idle or Refuel Service DEF See Dealer** — This message will continuously display when the mileage counter reaches zero, and will be accompanied by a periodic chime.
- The vehicle will only be capable of a maximum speed of 5 MPH upon the first of the following conditions to occur:
  - If the vehicle is shutoff and restarted.
  - If the vehicle is idled for an extended period of time, approximately one hour or greater.
  - If the system detects that the level of fuel in the tank has increased.
- **5 MPH Max Speed Service DEF System See Dealer** — This message will continuously display, and will be accompanied by a periodic chime. Although the vehicle can be started and placed in gear, the vehicle will only operate at a maximum speed of 5 MPH. Your vehicle will require towing, see your authorized dealer for service.

NOTE: When this message is displayed, the engine can still be started. However, the vehicle will only operate at a maximum speed of 5 MPH.

RAM Active Air System

Your vehicle is equipped with an advanced Ram Active Air system that provides enhanced performance, especially when towing under demanding hot or high altitude conditions. If the EVIC displays the message "Active Airbox Service Required See Dealer", vehicle performance may be reduced until service is performed by an authorized RAM dealer.

Vehicle Information (Customer Information Features)

Press and release the UP or DOWN button until "Vehicle Info" displays in the EVIC and press the SELECT button. Press the UP and DOWN button to scroll through the available information displays, then press SELECT to display anyone of the following choices.

- *Battery Voltage*

Displays the actual battery voltage.

NOTE: The battery voltage may show a fluctuation at various engine temperatures. This cycling operation is caused by the post-heat cycle of the intake manifold heater system. The number of cycles and the length of the cycling operation is controlled by the engine control module. Post-heat operation can run for several minutes, and then the electrical system and voltmeter needle will stabilize.

- *Coolant Temp*

Displays the actual coolant temperature.

- *Oil Pressure*

Displays the actual oil pressure.

- *Trans Temperature*

Displays the actual automatic transmission sump temperature.

- *Engine Hours*

Displays the total hours of engine operation, and the hours in drive and at idle.

- *Oil Filter Life*

Displays the percentage of oil filter life remaining, and the miles since the last reset.

- *Fuel Filter Life*

Displays the percentage of fuel filter life remaining, and the miles since the last reset.

- *Exhaust Brake*

Displays actual exhaust brake power.

- *Turbo Boost*

Displays actual turbo boost value.

- *Tire Pressure Monitor System*

Displays the actual tire pressure

STARTING AND OPERATING

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STARTING PROCEDURES

Before starting your vehicle, adjust your seat, adjust both inside and outside mirrors, and fasten your seat belts.

The starter should not be operated for more than 15-second intervals. Waiting a few minutes between such intervals will protect the starter from overheating.

WARNING!

- **Do not leave children or animals inside parked vehicles in hot weather. Interior heat build up may cause serious injury or death.**
- **When leaving the vehicle, always remove the key fob and lock your vehicle.**

(Continued)

WARNING! *(Continued)*

- **Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition of a vehicle equipped with Keyless Enter-N-Go in the ACC or ON/RUN mode. A child could operate power windows, other controls, or move the vehicle.**

Manual Transmission – If Equipped

Apply the parking brake, place the shift lever in NEUTRAL and press the clutch pedal to the floor before starting the vehicle. This vehicle is equipped with a clutch interlocking ignition system. It will not start unless the clutch is fully pressed.

Automatic Transmission – If Equipped

Start the engine with the transmission in the NEUTRAL or PARK position. Apply the brake before shifting to any driving range.

Tip Start Feature

Do not press the accelerator. Turn the ignition switch briefly to the START position and release it. The starter motor will continue to run but will automatically disengage when the engine is running.

Keyless Enter-N-Go™

This feature allows the driver to operate the ignition switch with the push of a button, as long as the Remote Start/Keyless Enter-N-Go™ Key Fob is in the passenger compartment.

Normal Starting

Using The ENGINE START/STOP Button

1. The transmission must be in PARK or NEUTRAL.
2. Press and hold the brake pedal while pressing the ENGINE START/STOP button once.
3. The system takes over and attempts to start the vehicle. If the vehicle fails to start, the starter will disengage automatically after 10 seconds.

4. If you wish to stop the cranking of the engine prior to the engine starting, remove your foot from the brake pedal and press the button again.

NOTE: Normal starting of either a cold or a warm engine is obtained without pumping or pressing the accelerator pedal.

NOTE: Under cold weather conditions, the engine may not immediately crank if the "Wait To Start" telltale is illuminated. This is normal operation. For vehicles equipped with Keyless Enter-N-Go™, the vehicle will automatically crank when the "Wait To Start" time has elapsed. See the section "Starting Procedure Engine Manifold Air Temperature 0°F to 66°F (18° C to 19°C)" for more information.

To Turn Off The Engine Using ENGINE START/STOP Button

1. Place the shift lever/shift selector in PARK, then press and release the ENGINE START/STOP button.
2. The ignition switch will return to the OFF position.
3. If the shift lever/shift selector is not in PARK, the ENGINE START/STOP button must be held for two seconds and vehicle speed must be above 5 mph (8 km/h) before the engine will shut off. The ignition switch position will remain in the ACC position until the shift lever/shift selector is in PARK and the button is pressed twice to the OFF position. If the shift lever/shift selector is not in PARK and the ENGINE START/STOP button is pressed once, the EVIC (if equipped) will display a "Vehicle Not In Park" message and the engine will remain running. Never leave a vehicle out of the PARK position, or it could roll.

NOTE: If the ignition switch is left in the ACC or RUN (engine not running) position and the transmission is in PARK, the system will automatically time out after 30 minutes of inactivity and the ignition will switch to the OFF position.

ENGINE START/STOP Button Functions – With Driver's Foot OFF The Brake Pedal (In PARK Or NEUTRAL Position)

The ENGINE START/STOP button operates similar to an ignition switch. It has four positions, OFF, ACC, RUN and START. To change the ignition switch positions without starting the vehicle and use the accessories follow these steps.

1. Starting with the ignition switch in the OFF position:
2. Press the ENGINE START/STOP button once to change the ignition switch to the ACC position (EVIC displays "ACC"),
3. Press the ENGINE START/STOP button a second time to change the ignition switch to the RUN position (EVIC displays "RUN"),
4. Press the ENGINE START/STOP button a third time to return the ignition switch to the OFF position (EVIC displays "OFF").

Keyless Enter-N-Go™ Starting Procedure – Engine Manifold Air Temperature 0° F To 66° F (–18° C to 19° C)

NOTE: The temperature displayed in the Electronic Vehicle Information Center (EVIC) does not necessarily reflect the engine manifold air temperature. Refer to "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for further information. When engine temperatures fall below 66°F (19°C) the "Wait To Start Light" will remain on indicating the intake manifold heater system is active.

Follow the steps in the "Normal Starting" procedure except:

1. Pushing the engine start button with the driver's foot on the brake will move the ignition from OFF or ACC to RUN, and will illuminate the "Wait To Start" telltale. The engine will not immediately crank, this is normal operation.
2. The "Wait To Start" telltale will remain on for a period of time that varies depending on the engine temperature.
3. While the "Wait to Start" telltale is on, the EVIC will additionally display a gauge or bar whose initial length represents the full "Wait to Start" time period. Its length will decrease until it disappears when the "Wait to Start" time has elapsed.

CAUTION!

If the "Water in Fuel Indicator Light" remains on, DO NOT START engine before you drain the water from the fuel filters to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.

4. After the engine "Wait To Start" telltale goes off, the engine will automatically crank.

CAUTION!

The engine may automatically crank when the "Wait To Start" time has elapsed. To abort the automatic starting process, ensure the driver's foot is fully removed from the brake pedal prior to pushing the START/STOP button to cycle the ignition off.

5. After engine start-up, check to see that there is oil pressure.
6. Allow the engine to idle about three minutes until the manifold heaters have completed the post-heat cycle.
7. Release the parking brake and drive.

NOTE:

- Engine idle speed will automatically increase to 1,000 RPM and engage the Variable Geometry Turbocharger at low coolant temperatures to improve engine warm-up.
- The engine may not automatically crank after the engine "Wait To Start" telltale goes off if a door or the hood is ajar.
- If the engine stalls, or if the ignition switch is left ON for more than two minutes after the "Wait To Start Light" goes out, reset the grid heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON. Repeat steps 1 through 7 of "Keyless Enter-N-Go Starting Procedure – Engine Manifold Air Temperature Below 66° F (19° C)."

Extreme Cold Weather

The Cummins® diesel engine is equipped with several features designed to assist cold weather starting and operation:

- The engine block heater is a resistance heater installed in the water jacket of the engine just above and behind the oil filter. It requires a 110–115 Volt AC electrical outlet with a grounded, three-wire extension cord.

NOTE: The engine block heater cord is a factory installed option. If your vehicle is not equipped, heater cords are available from your authorized MOPAR® dealer.

- A 12 Volt heater built into the fuel filter housings aid in preventing fuel gelling. It is controlled by a built-in thermostat.
- A heated intake air system both improves engine starting and reduces the amount of white smoke generated by a warming engine.

Normal Starting Procedure – Engine Manifold Air Temperature Above 66° F (19° C)

Observe the instrument panel cluster lights when starting the engine.

1. Always apply the parking brake.
2. Shift into PARK for an automatic transmission. For vehicles equipped with a manual transmission, fully press and hold the clutch pedal and shift into NEUTRAL.
3. Turn the ignition switch to the ON position and watch the instrument panel cluster lights.

CAUTION!

If the "Water in Fuel Indicator Light" remains on, DO NOT START the engine before you drain the water from the fuel filters to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.

4. Turn the ignition switch to the START position and crank the engine. Do not press the accelerator during starting.

CAUTION!

Do not crank engine for more than 15 seconds at a time or starter motor damage may result. Turn the ignition switch to the OFF position and wait at least two minutes for the starter to cool before repeating start procedure.

5. When the engine starts, release the key fob.
6. Check that the oil pressure warning light has turned off.
7. Release the parking brake.

Starting Procedure – Engine Manifold Air Temperature 0°F To 66°F (–18°C to 19°C)

NOTE: The temperature displayed in the Electronic Vehicle Information Center (EVIC) does not necessarily reflect the engine manifold air temperature. Refer to "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for further information. When engine temperatures fall below 66°F (19°C) the "Wait To Start Light" will remain on indicating the intake manifold heater system is active.

Follow the steps in the "Normal Starting" procedure except:

1. The "Wait To Start" telltale will remain on for a period of time that varies depending on the engine temperature.

2. While the "Wait To Start" telltale is on, the EVIC will additionally display a gauge or bar whose initial length represents the full "Wait To Start" time period. Its length will decrease until it disappears when the "Wait To Start" time has elapsed.

CAUTION!

If the "Water in Fuel Indicator Light" remains on, DO NOT START engine before you drain the water from the fuel filters to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.

3. After the "Wait To Start" telltale goes off, turn the ignition switch to the START position. Do not press the accelerator during starting.

CAUTION!

Do not crank engine for more than 15 seconds at a time or starter motor damage may result. Turn the ignition switch to the OFF position and wait at least two minutes for the starter to cool before repeating start procedure.

4. After engine start-up, check that the oil pressure warning light has turned off.
5. Allow the engine to idle about three minutes until the manifold heaters have completed the post-heat cycle.
6. Release the parking brake and drive.

NOTE:

- Engine idle speed will automatically increase to 1,000 RPM and engage the Variable Geometry Turbocharger at low coolant temperatures to improve engine warm-up.

- Automatic equipped vehicles with optional Keyless Enter-N-Go™ – If the start button is pushed once while in park with the ignition off and driver's foot on the brake pedal, the vehicle will automatically crank and start after the Wait to Start time has elapsed. If it is desired to abort the start process before it completes, the driver's foot should be fully removed from the brake pedal prior to pushing the start button again in order for the ignition to move directly to off.
- If the engine stalls, or if the ignition switch is left ON for more than two minutes after the "Wait To Start" telltale goes out, reset the grid heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON. Repeat steps 1 through 5 of "Starting Procedure – Engine Manifold Air Temperature Below 66°F (19°C)."

Starting Procedure – Engine Manifold Air Temperature Below 0°F (-18°C)

In extremely cold weather below 0°F (-18°C) it may be beneficial to cycle the manifold heaters twice before attempting to start the engine. This can be accomplished by turning the ignition OFF for at least five seconds and then back ON after the "Wait To Start" telltale has turned off, but before the engine is started. However, excessive cycling of the manifold heaters will result in damage to the heater elements or reduced battery voltage.

NOTE: If multiple pre-heat cycles are used before starting, additional engine run time may be required to maintain battery state of charge at a satisfactory level.

1. If the engine stalls after the initial start, the ignition must be turned to the OFF position for at least five seconds and then to the ON position to recycle the manifold heaters.

NOTE: Excessive white smoke and poor engine performance will result if manifold heaters are not recycled.

2. Heat generated by the manifold heaters dissipates rapidly in a cold engine. If more than two minutes pass between the time the "Wait To Start" telltale turns off and the engine is started, recycle the manifold heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON.
3. If the vehicle is driven and vehicle speed exceeds 19 mph (31 km/h) before the manifold heater post-heat (after start) cycle is complete, the manifold heaters will shut off.
4. If the engine is started before the "Wait To Start" telltale turns off, the preheat cycle will turn off.
5. If the engine is cranked for more than 10 seconds, the post-heat cycle will turn off.

NOTE:

- Engine idle speed will automatically increase to 1,000 RPM and engage the Variable Geometry Turbocharger at low coolant temperatures to improve engine warm-up.
- When a diesel engine is allowed to run out of fuel or the fuel gels at low temperatures, air is pulled into the fuel system. If your engine has run out of fuel, refer to "Maintenance Procedures/Priming If The Engine Has Run Out Of Fuel" in "Maintaining Your Vehicle" for further information.
- If the engine stalls, or if the ignition switch is left ON for more than two minutes after the "Wait To Start" telltale goes out, reset the grid heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON. Repeat steps 1 through 5 of "Starting Procedure – Engine Manifold Air Temperature Below 66°F (19°C)."

Starting Fluids

WARNING!

Starting fluids or flammable liquids must never be used in the Cummins® diesel engine (see Warning label). Never pour diesel fuel, flammable liquid, starting fluids (ether) into the air cleaner canister, air intake piping, or turbocharger inlet in an attempt to start the vehicle. This could result in a flash fire and explosion causing serious personal injury and engine damage.

The engine is equipped with an automatic electric air preheating system. If the instructions in this manual are followed, the engine should start in all conditions.

WARNING!

- **Do not leave children or animals inside parked vehicles in hot weather. Interior heat build up may cause serious injury or death.**
- **When leaving the vehicle, always remove the key fob and lock your vehicle.**
- **Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition of a vehicle equipped with Keyless Enter-N-Go in the ACC or ON/RUN mode. A child could operate power windows, other controls, or move the vehicle.**

NORMAL OPERATION – DIESEL ENGINE

Observe the following when the engine is operating.

- All message center lights are off.
- Malfunction Indicator Light (MIL) is off.
- Engine oil pressure is above 10 psi (69 kPa) at idle.
- Voltmeter operation:

The voltmeter may show a gauge fluctuation at various engine temperatures. This cycling operation is caused by the post-heat cycle of the intake manifold heater system. The number of cycles and the length of the cycling operation is controlled by the engine control module. Post-heat operation can run for several minutes, and then the electrical system and voltmeter needle will stabilize.

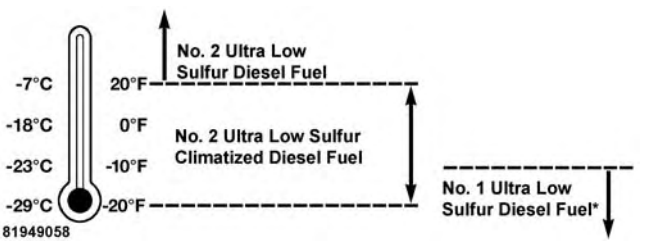
The cycling action will cause temporary dimming of the headlamps, interior lamps, and also a noticeable reduction in blower motor speed.

Cold Weather Precautions

Operation in ambient temperature below 32°F (0°C) may require special considerations. The following charts suggest these options:

Fuel Operating Range

NOTE: Use "Ultra Low Sulfur Diesel Fuels" **ONLY.**



*No. 1 Ultra Low Sulfur Diesel Fuel should only be used where extended arctic conditions (-10°F/-23°C) exist.

NOTE:

- Use of Climatized Ultra Low Sulfur Diesel Fuel or Number 1 Ultra Low Sulfur Diesel Fuel results in a noticeable decrease in fuel economy.
- Climatized Ultra Low Sulfur Diesel Fuel is a blend of Number 2 Ultra Low Sulfur and Number 1 Ultra Low Sulfur Diesel Fuels which reduces the temperature at which wax crystals form in fuel.
- The fuel grade should be clearly marked on the pump at the fuel station.
- The engine requires the use of **"Ultra Low Sulfur Diesel Fuel"**. Use of incorrect fuel could result in engine and exhaust system damage. Refer to "Fuel Requirements" in "Starting and Operating" for further information.

Engine Oil Usage

Refer to "Maintenance Procedures" in "Maintaining Your Vehicle" for the correct engine oil viscosity.

Winter Front Usage

A winter front or cold weather cover is to be used in ambient temperatures below -10°C, especially during extended idle conditions to reduce condensation build-up within engine crankcase. If a winter front or cold weather cover is to be used, a percentage of the total grille opening area must be left uncovered to provide sufficient air flow to the charge air cooler and automatic transmission oil cooler. The percentage of opening must be increased with the increasing ambient air temperature and/or engine load. If the cooling fan can be heard cycling frequently, increase the size of the opening in the winter front. A suitable cold weather cover is available from your MOPAR® dealer.

Battery Blanket Usage

A battery loses 60% of its cranking power as the battery temperature decreases to 0°F (-18°C). For the same decrease in temperature, the engine requires twice as much power to crank at the same RPM. The use of 120 VAC powered battery blankets will greatly increase starting capability at low temperatures. Suitable battery blankets are available from your authorized MOPAR® dealer.

Engine Warm-Up

Avoid full throttle operation when the engine is cold. When starting a cold engine, bring the engine up to operating speed slowly to allow the oil pressure to stabilize as the engine warms up.

NOTE: High-speed, no-load running of a cold engine can result in excessive white smoke and poor engine performance. No-load engine speeds should be kept under 1,200 RPM during the warm-up period, especially in cold ambient temperature conditions.

Your vehicle is equipped with a turbo speed limiter, this feature limits the engine speed to 1,200 RPM when engine coolant temperatures are below 70°F (21°C). This feature is designed to protect the turbocharger from damage and will only operate in PARK or NEUTRAL.

If temperatures are below 32°F (0°C), operate the engine at moderate speeds for five minutes before full loads are applied.

NOTE:

- If ambient temperatures are low and the coolant temperature is below 180°F (82°C), the engine idle speed will slowly increase to 1,000 RPM after two minutes of idle, if the following conditions are met:
  - foot is off brake pedal and throttle pedal
  - automatic transmission is in PARK
  - vehicle speed is zero
  - Applying the throttle will cancel fast idle
- Operating the exhaust brake at idle will greatly improve warm up rate and will help keep the engine close to operating temperature during extended idle.

Engine Idling

Avoid prolonged idling, long periods of idling may be harmful to your engine because combustion chamber temperatures can drop so low that the fuel may not burn completely. Incomplete combustion allows carbon and varnish to form on piston rings, engine valves, and injector nozzles. Also, the unburned fuel can enter the crankcase, diluting the oil and causing rapid wear to the engine.

If the engine is allowed to idle, under some conditions the idle speed may increase to 900 RPM then return to normal idle speed. This is normal operation.

NOTE: For EVIC messages related to the vehicle's exhaust system, refer to "Maintenance Procedures/ Intervention Regeneration Strategy – EVIC Message Process Flow" in "Maintaining Your Vehicle" for further information.

Idle-Up Feature – Automatic Transmission Only

The driver-controlled high idle speed feature will help increase cylinder temperatures and provide additional cab heat, however, excessive idling may still cause the exhaust aftertreatment system to not properly regenerate. Extended periods of idle time should be avoided.

The Idle-Up feature uses the speed control switches to increase engine idle speed and quickly warm the vehicle's interior.

1. With the transmission in PARK, the parking brake applied, and the engine running, press the speed control switch to the ON position, then press the SET switch.
2. The engine RPM will go up to 1100 RPM. To increase the RPM, press and hold the ACCEL/RESUME switch and the idle speed will increase to approximately 1500 RPM. To decrease the RPM, press and hold the DECEL switch and the idle speed will decrease to approximately 1100 RPM.
3. To cancel the Idle–Up feature, either press the CANCEL switch, press the ON/OFF switch, or press the brake pedal.

Stopping The Engine

Idle the engine a few minutes before routine shutdown. After full load operation, idle the engine three to five minutes before shutting it down. This idle period will allow the lubricating oil and coolant to carry excess heat away from the combustion chamber, bearings, internal components, and turbocharger. This is especially important for turbocharged, charge air-cooled engines.

NOTE:

- During engine shut down on vehicles equipped with manual transmissions, it is normal for the diesel engine to resonate heavily for a moment during engine shut off. When the engine is connected to a manual transmission, this resonance causes load gear rattle from the transmission. This is commonly referred to as "shut down rattle." The manufacturer recommends performing engine shut down with the clutch pedal pushed to the floor (clutch disengaged). When engine shut down is performed in this manner the rattle is reduced (not eliminated).
- Refer to the following chart for proper engine shutdown.

Driving Condition	Load	Turbo-charger Tempera-ture	Idle Time (min.) Before Engine Shutdown
Stop and Go	Empty	Cool	Less than One
Stop and Go	Medium		One
Highway Speeds	Medium	Warm	Two
City Traffic	Maximum GCWR		Three
Highway Speeds	Maximum GCWR		Four
Uphill Grade	Maximum GCWR	Hot	Five

Idle Shutdown

This feature can be enabled so that the truck will automatically shutdown when the truck has been idling for a set period of time when the engine is at operating temperature. Idle time can be set in 5 minute increments between 5 and 60 minutes. See your local authorized dealer to enable this feature.

Programmable Maximum Vehicle Speed (Chassis Cab Only)

This feature allows the owner to set a maximum vehicle speed for the vehicle. The 3500 Series maximum vehicle speed can be set between 40 mph (64 km/h) and 87 mph (140 km/h). The 4500/5500 Series maximum vehicle speed can be set between 40 mph (64 km/h) and 85 mph (136 km/h). See your local authorized dealer to enable this feature.

NOTE: DO NOT set the maximum vehicle speed to a value greater than what the vehicle tires are rated for.

Operating Precautions

Avoid Overheating The Engine

The temperature of the engine coolant (antifreeze) (a mixture of 50% ethylene-glycol and 50% water) must not exceed the normal range of the temperature gauge 240°F (116°C) with a 16 psi (110 kPa) radiator cap.

Usually the engine coolant (antifreeze) temperature indicated during operation will be to the left of center in the normal range of the gauge.

Avoid Low Coolant Temperature Operation

Continual operation at low engine coolant (antifreeze) temperature below the normal range on the gauge 140°F (60°C) can be harmful to the engine. Low engine coolant (antifreeze) temperature can cause incomplete combustion which allows carbon and varnish to form on piston rings and injector nozzles. Also, the unburned fuel can enter the crankcase, diluting the lubricating oil and causing rapid wear to the engine.

Cooling System Tips – Automatic Transmission

To reduce potential for engine and transmission overheating in high ambient temperature conditions, take the following actions:

- *City Driving —*

When stopped, shift the transmission into NEUTRAL and increase engine idle speed.

- *Highway Driving —*

Reduce your speed.

- *Up Steep Hills —*

Select a lower transmission gear.

- *Air Conditioning —*

Turn it off temporarily.

Do Not Operate The Engine With Low Oil Pressure

When the engine is at normal operating temperature, the minimum oil pressures required are:

Idle 700 to 800 RPM	10 psi (69 kPa)
Full speed and load	30 psi (207 kPa)

CAUTION!

If oil pressure falls to less than normal readings, shut the engine off immediately. Failure to do so could result in immediate and severe engine damage.

Do Not Operate The Engine With Failed Parts

All engine failures give some warning before the parts fail. Be on the alert for changes in performance, sounds, and visual evidence that the engine requires service. Some important clues are:

- engine misfiring or vibrating severely
- sudden loss of power
- unusual engine noises
- fuel, oil or coolant leaks
- sudden change, outside the normal operating range, in the engine operating temperature
- excessive smoke
- oil pressure drop

ENGINE BLOCK HEATER — IF EQUIPPED

The engine block heater warms engine coolant and permits quicker starts in cold weather. Connect the heater cord to a ground-fault interrupter protected 110–115 Volt AC electrical outlet with a grounded, three-wire extension cord.

The engine block heater cord is routed under the hood to the right side and can be located just behind the grille near the headlamp.

NOTE: The engine block heater cord is a factory installed option. If your vehicle is not equipped, heater cords are available from your authorized MOPAR® dealer.

The block heater must be plugged in at least one hour to have an adequate warming effect on the coolant.

WARNING!

Remember to disconnect the cord before driving. Damage to the 110–115 Volt electrical cord could cause electrocution.

NOTE: The block heater will require 110 Volts AC and 6.5 Amps to activate the heater element.

Block Heater Usage

For ambient temperatures below 0°F (-18°C), engine block heater usage is recommended.

For ambient temperatures below –20°F (-29°C), engine block heater usage is required.

DIESEL EXHAUST BRAKE (ENGINE BRAKING)

The purpose of the exhaust brake (engine braking) feature is to supply negative (braking) torque from the engine. Typically, the engine braking is used for, but not limited to, vehicle towing applications where vehicle braking can be achieved by the internal engine power, thereby sparing the mechanical brakes of the vehicle.

Benefits of the exhaust brake are:

- vehicle driving control
- reduced brake fade
- longer brake life
- faster cab warm-up.

The exhaust brake feature will only function when the driver toggles it on by pushing the exhaust brake button

until the "Exhaust Brake Indicator" is illuminated. Normal (Full Strength) exhaust brake mode is indicated by a yellow "Exhaust Brake Indicator".

Exhaust Brake Switch

Once the "Exhaust Brake Indicator" is illuminated and the vehicle is moving faster than 5 mph (8 km/h); the exhaust brake will automatically operate when the driver removes pressure from the accelerator pedal. Exhaust braking is most effective when the engine RPM is higher. The automatic transmission will downshift more aggressively in TOW/HAUL mode when the exhaust brake is enabled to increase brake performance.

CAUTION!

Use of aftermarket exhaust brakes is not recommended and could lead to engine damage

WARNING!

Do not use the exhaust brake feature when driving in icy or slippery conditions as the increased engine braking can cause the rear wheels to slide and the vehicle to swing around with the possible loss of vehicle control, which may cause an accident possibly resulting in personal injury or death.

NOTE: For optimum braking power it is recommended to use the exhaust brake while in TOW/HAUL mode.

The exhaust brake feature can also be used to reduce the engine warm up time. To use the exhaust brake as a warm-up device, the vehicle must be stopped or moving less than 5 mph (8 km/h), the "Exhaust Brake Indicator" must be on, and the coolant temperature must be below 180°F (82°C) and ambient temperature below 60°F (16°C).

Automatic Smart Exhaust Brake

Automatic Exhaust Brake technology delivers smoother, less aggressive exhaust braking characteristics during downhill descents. Although it can apply full exhaust braking force if needed, Automatic Exhaust Brake may not apply obvious braking if the vehicle speed is not increasing. Automatic Exhaust Brake is intended to maintain vehicle speed, while Full Exhaust Brake is intended to reduce vehicle speed.

Automatic Exhaust Brake can be enabled by pushing the exhaust brake button again anytime after the normal Full Exhaust Brake has been turned on. The "Exhaust Brake Indicator" in the EVIC will change from Yellow to Green when Automatic Exhaust Brake is enabled. Pushing the exhaust brake button again will toggle the exhaust brake mode to off.

AUTOMATIC TRANSMISSION — IF EQUIPPED

CAUTION!

Damage to the transmission may occur if the following precautions are not observed:

- **Shift into PARK only after the vehicle has come to a complete stop.**
- **Shift into or out of REVERSE only after the vehicle has come to a complete stop and the engine is at idle speed.**

(Continued)

CAUTION! *(Continued)*

- **Do not shift between PARK, REVERSE, NEUTRAL, or DRIVE when the engine is above idle speed.**
- **Before shifting into any gear, make sure your foot is firmly pressing on the brake pedal.**

WARNING!

- **Unintended movement of a vehicle could injure those in and near the vehicle. As with all vehicles, you should never exit a vehicle while the engine is running. Before exiting a vehicle, always apply the parking brake, shift the transmission into PARK, turn the engine OFF, and remove the key fob. When the ignition is in the OFF position, the transmission is locked in PARK, securing the vehicle against unwanted movement.**
- **When leaving the vehicle, always remove the key fob and lock your vehicle.**

(Continued)

WARNING! ***(Continued)***

- **Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition (in a vehicle equipped with Keyless Enter-N-Go™) in the ACC or ON/RUN position. A child could operate power windows, other controls, or move the vehicle.**

(Continued)

WARNING! ***(Continued)***

- **It is dangerous to shift out of PARK or NEUTRAL if the engine speed is higher than idle speed. If your foot is not firmly pressing the brake pedal, the vehicle could accelerate quickly forward or in reverse. You could lose control of the vehicle and hit someone or something. Only shift into gear when the engine is idling normally and your foot is firmly pressing the brake pedal.**

NOTE: You must press and hold the brake pedal while shifting out of PARK.

Key Ignition Park Interlock

This vehicle is equipped with a Key Ignition Park Interlock which requires the transmission to be in PARK before the ignition switch can be turned to the full OFF (key removal) position. The key fob can only be removed from the ignition when the ignition is in the full OFF

position, and the transmission is locked in PARK whenever the ignition switch is in the full OFF position.

Brake/Transmission Shift Interlock System

This vehicle is equipped with a Brake Transmission Shift Interlock System (BTSI) that holds the shift lever in PARK unless the brakes are applied. To shift the transmission out of PARK, the ignition switch must be turned to the ON/RUN position (engine running or not) and the brake pedal must be pressed.

Six-Speed Automatic Transmission – If Equipped

Chassis Cab models (with automatic transmission) use the AS69RC transmission (which is equipped with a Power Take-Off [PTO] access cover on the right side of the transmission case). Pickup models may use either the AS69RC transmission, or the 68RFE transmission (which has no PTO access cover).

The transmission gear position display (located in the instrument cluster) indicates the transmission gear range. The shift lever is mounted on the right side of the steering column. You must press the brake pedal to move the shift lever out of PARK (refer to "Brake/Transmission Shift Interlock System" in this section). To drive, move the shift lever from PARK or NEUTRAL to the DRIVE position. Pull the shift lever toward you when shifting into REVERSE or PARK, or when shifting out of PARK.

The electronically-controlled transmission provides a precise shift schedule. The transmission electronics are self-calibrating; therefore, the first few shifts on a new vehicle may be somewhat abrupt. This is a normal condition, and precision shifts will develop within a few hundred miles (kilometers).

Only shift from DRIVE to PARK or REVERSE when the accelerator pedal is released and the vehicle is stopped. Be sure to keep your foot on the brake pedal when shifting between these gears.

The transmission shift lever has only PARK, REVERSE, NEUTRAL, and DRIVE shift positions. Manual downshifts can be made using the Electronic Range Select (ERS) shift control (refer to "Electronic Range Select (ERS) Operation" in this section). Pressing the ERS (-/+) switches (on the shift lever) while in the DRIVE position will select the highest available transmission gear, and will display that gear in the instrument cluster as 6, 5, 4, 3, 2, 1.

Gear Ranges

DO NOT race the engine when shifting from PARK or NEUTRAL into another gear range.

NOTE: After selecting any gear range, wait a moment to allow the selected gear to engage before accelerating. This is especially important when the engine is cold.

PARK

This range supplements the parking brake by locking the transmission. The engine can be started in this range. Never attempt to use PARK while the vehicle is in motion. Apply the parking brake when leaving the vehicle in this range.

When parking on a level surface, you may shift the transmission into PARK first, and then apply the parking brake.

When parking on a hill, apply the parking brake before shifting the transmission to PARK, otherwise the load on the transmission locking mechanism may make it difficult to move the shift lever out of PARK. As an added

precaution, turn the front wheels toward the curb on a downhill grade and away from the curb on an uphill grade.

On four-wheel drive vehicles be sure that the transfer case is in a drive position.

WARNING!

- **Never use the PARK position as a substitute for the parking brake. Always apply the parking brake fully when parked to guard against vehicle movement and possible injury or damage.**
- **Your vehicle could move and injure you and others if it is not completely in PARK. Check by trying to move the shift lever out of PARK with the brake pedal released. Make sure the transmission is in PARK before leaving the vehicle.**

(Continued)

WARNING! ***(Continued)***

- **It is dangerous to shift out of PARK or NEUTRAL if the engine speed is higher than idle speed. If your foot is not firmly pressing the brake pedal, the vehicle could accelerate quickly forward or in reverse. You could lose control of the vehicle and hit someone or something. Only shift into gear when the engine is idling normally and your foot is firmly pressing the brake pedal.**

(Continued)

WARNING! *(Continued)*

- **Unintended movement of a vehicle could injure those in and near the vehicle. As with all vehicles, you should never exit a vehicle while the engine is running. Before exiting a vehicle, always apply the parking brake, shift the transmission into PARK, turn the engine OFF, and remove the key fob. When the ignition is in the OFF position, the transmission is locked in PARK, securing the vehicle against unwanted movement.**
- **When leaving the vehicle, always remove the key fob and lock your vehicle.**

(Continued)

WARNING! *(Continued)*

- **Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition (in a vehicle equipped with Keyless Enter-N-Go™) in the ACC or ON/RUN position. A child could operate power windows, other controls, or move the vehicle.**

CAUTION!

- **Before moving the shift lever out of PARK, you must turn the ignition switch from the OFF position to the ON/RUN position, and also press the brake pedal. Otherwise, damage to the shift lever could result.**
- **DO NOT race the engine when shifting from PARK or NEUTRAL into another gear range, as this can damage the drivetrain.**

The following indicators should be used to ensure that you have engaged the transmission into the PARK position:

- When shifting into PARK, pull the shift lever toward you and move it all the way counterclockwise until it stops.
- Release the shift lever and make sure it is fully seated in the PARK gate.
- Look at the transmission gear position display and verify that it indicates the PARK position.
- With brake pedal released, verify that the shift lever will not move out of PARK.

REVERSE

This range is for moving the vehicle backward. Shift into REVERSE only after the vehicle has come to a complete stop.

NEUTRAL

Use this range when the vehicle is standing for prolonged periods with the engine running. The engine may be started in this range. Set the parking brake and shift the transmission into PARK if you must leave the vehicle.

WARNING!

Do not coast in NEUTRAL and never turn off the ignition to coast down a hill. These are unsafe practices that limit your response to changing traffic or road conditions. You might lose control of the vehicle and have a collision.

CAUTION!

Towing the vehicle, coasting, or driving for any other reason with the transmission in NEUTRAL can cause severe transmission damage. Refer to "Recreational Towing" in "Starting And Operating" and "Towing A Disabled Vehicle" in "What To Do In Emergencies" for further information.

DRIVE

This range should be used for most city and highway driving. It provides the smoothest upshifts and downshifts, and the best fuel economy. The transmission automatically upshifts through underdrive first, second, and third gears, direct fourth gear and overdrive fifth and sixth gears. The DRIVE position provides optimum driving characteristics under all normal operating conditions.

When frequent transmission shifting occurs (such as when operating the vehicle under heavy loading conditions, in hilly terrain, traveling into strong head winds, or while towing heavy trailers), use the Electronic Range Select (ERS) shift control (refer to "Electronic Range Select (ERS) Operation" in this section) to select a lower gear range. Under these conditions, using a lower gear range will improve performance and extend transmission life by reducing excessive shifting and heat buildup.

If the transmission temperature exceeds normal operating limits, the powertrain controller will modify the transmission shift schedule and expand the range of torque converter clutch engagement. This is done to prevent transmission damage due to overheating.

If the transmission becomes extremely hot or is in danger of overheating, the "Transmission Temperature Warning Light" may illuminate and the transmission may operate differently until the transmission cools down.

NOTE: Use caution when operating a heavily loaded vehicle at low speeds (such as towing a trailer up a steep grade, or in stop-and-go traffic) during hot weather. In these conditions, torque converter slip can impose a significant additional heat load on the cooling system. Downshifting the transmission to the lowest possible gear (when climbing a grade), or shifting to NEUTRAL (when stopped in heavy traffic) can help to reduce this excess heat generation.

During cold temperatures, transmission operation may be modified depending on engine and transmission temperature as well as vehicle speed. This feature improves warm up time of the engine and transmission to achieve maximum efficiency. Engagement of the torque converter clutch is inhibited until the transmission fluid is warm (see the "Note" under "Torque Converter Clutch" in this section). On Pickup models with 68RFE transmission, top overdrive gear is also inhibited until the transmission fluid is warm, and during extremely cold temperatures (-16°F [-27°C] or below), operation may briefly be limited to first and direct gears only. On trucks with AS69RC transmission, fifth and sixth gears may be inhibited briefly on cold starts below 41°F (5°C), and during very cold temperatures (-4°F [-20°C] or below), operation may briefly be limited to third gear only. During this condition, the ability of the vehicle to

accelerate under heavily loaded conditions may be reduced. In all cases, normal operation will resume once the transmission temperature has risen to a suitable level.

Transmission Limp Home Mode

Transmission function is monitored electronically for abnormal conditions. If a condition is detected that could result in transmission damage, Transmission Limp Home Mode is activated. In this mode, the transmission remains in fourth gear (for 68RFE transmission) or third gear (for AS69RC transmission) regardless of which forward gear is selected. If an AS69RC-equipped truck enters Limp Home Mode at highway speeds, it will initially engage fifth gear, until the vehicle slows to a speed where third gear can be engaged. PARK, REVERSE, and NEUTRAL will continue to operate. The Malfunction Indicator Light (MIL) may be illuminated. Limp Home Mode allows the vehicle to be driven to an authorized dealer for service without damaging the transmission.

In the event of a momentary problem, the transmission can be reset to regain all forward gears by performing the following steps:

1. Stop the vehicle.
2. Shift the transmission into PARK.
3. Turn the ignition switch to the OFF position.
4. Wait approximately 10 seconds.
5. Restart the engine.
6. Shift into the desired gear range. If the problem is no longer detected, the transmission will return to normal operation.

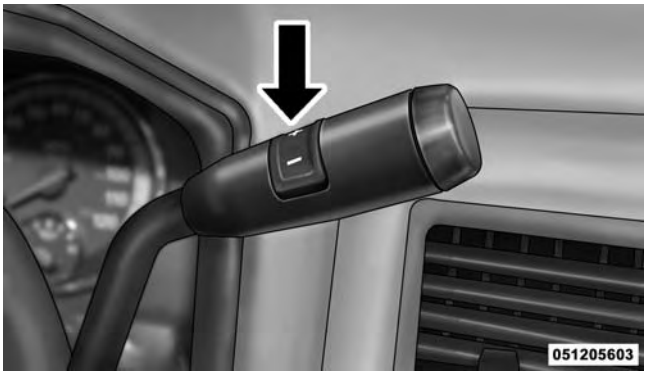
NOTE: Even if the transmission can be reset, we recommend that you visit your authorized dealer at your earliest possible convenience. Your authorized dealer has diagnostic equipment to determine if the problem could recur.

If the transmission cannot be reset, authorized dealer service is required.

Electronic Range Select (ERS) Operation

The Electronic Range Select (ERS) shift control allows the driver to limit the highest available gear when the shift lever is in the DRIVE position. For example, if you shift the transmission into 3 (third gear), the transmission will not shift above third gear, but will shift down into second and first gears normally.

You can switch between DRIVE and ERS mode at any vehicle speed. When the shift lever is in the DRIVE position, the transmission will operate automatically, shifting between all available gears. Tapping the ERS (-) switch will activate ERS mode, display the current gear in the instrument cluster, and maintain that gear as the top available gear. Once in ERS mode, tapping the ERS (-) or (+) switch will change the top available gear.



Column Shift Lever

To exit ERS mode, simply press and hold the ERS (+) switch until "D" is once again displayed in the transmission gear position indicator in the instrument cluster.

WARNING!

Do not downshift for additional engine braking on a slippery surface. The drive wheels could lose their grip and the vehicle could skid, causing a collision or personal injury.

Screen Display	1	2	3	4	5	6	D
Actual Gear(s) Allowed	1	1-2	1-3	1-4	1-5	1-6	1-6

NOTE: To select the proper gear position for maximum deceleration (engine braking), simply press and hold the ERS (-) switch down. The transmission will shift to the range from which the vehicle can best be slowed down.

CAUTION!

When using ERS for engine braking while descending steep grades, be careful not to overspeed the engine. Apply the brakes as needed to prevent engine overspeed.

Overdrive Operation

The automatic transmission includes an electronically controlled Overdrive (fifth and sixth gears). The transmission will automatically shift into Overdrive if the following conditions are present:

- the shift lever is in the DRIVE position,
- the transmission fluid has reached an adequate temperature,
- the engine coolant has reached an adequate temperature,
- vehicle speed is sufficiently high, and
- the TOW/HAUL switch has not been activated.

When To Use TOW/HAUL Mode

When driving in hilly areas, towing a trailer, carrying a heavy load, etc., and frequent transmission shifting occurs, press the TOW/HAUL switch to activate TOW/HAUL mode. This will improve performance and reduce the potential for transmission overheating or failure due to excessive shifting. When operating in TOW/HAUL mode, transmission upshifts are delayed, and the transmission will automatically downshift (for engine braking) when the throttle is closed and/or during steady braking maneuvers.

TOW/HAUL Switch

The "TOW/HAUL Indicator Light" will illuminate in the instrument cluster to indicate that TOW/HAUL mode has been activated. Pressing the switch a second time restores normal operation. Normal operation is always the default at engine start-up. If TOW/HAUL mode is desired, the switch must be pressed each time the engine is started.

WARNING!

Do not use the "TOW/HAUL" feature when driving in icy or slippery conditions. The increased engine braking could cause the rear wheels to slide, and the vehicle to swing around with the possible loss of vehicle control, which could cause an accident possibly resulting in personal injury or death.

Torque Converter Clutch

A feature designed to improve fuel economy has been included in the automatic transmission on your vehicle. A clutch within the torque converter engages automatically at calibrated speeds. This may result in a slightly different feeling or response during normal operation in the upper gears. When the vehicle speed drops or during some accelerations, the clutch automatically disengages.

NOTE:

- The torque converter clutch will not engage (and 68RFE-equipped trucks will not shift to sixth gear), until the transmission fluid and engine coolant are warm [usually after 1 to 3 miles (2 to 5 km) of driving]. Because the engine speed is higher when the torque converter clutch is not engaged, it may seem as if the transmission is not shifting properly when cold. This is normal. Using the Electronic Range Select (ERS) shift control, when the transmission is sufficiently warm, will demonstrate that the transmission is able to shift into and out of Overdrive.
- If the vehicle has not been driven for several days, the first few seconds of operation after shifting the transmission into gear may seem sluggish. This is due to the fluid partially draining from the torque converter into the transmission. This condition is normal and will not

cause damage to the transmission. The torque converter will refill within five seconds after starting the engine.

MANUAL TRANSMISSION — IF EQUIPPED

WARNING!

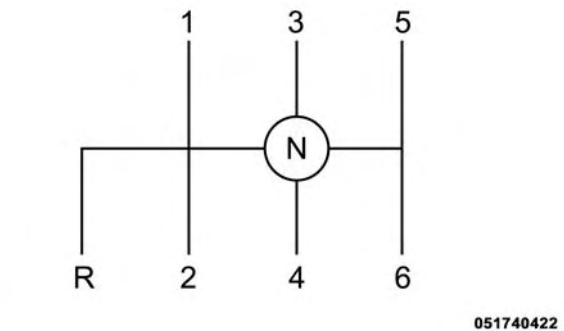
You or others could be injured if you leave the vehicle unattended without having the parking brake fully applied. The parking brake should always be applied when the driver is not in the vehicle, especially on an incline.

CAUTION!

Never drive with your foot resting on the clutch pedal, or attempt to hold the vehicle on a hill with the clutch pedal partially engaged, as this will cause abnormal wear on the clutch.

NOTE: During cold weather, you may experience increased effort in shifting until the transmission fluid warms up. This is normal.

Shifting



Shift Pattern

Truck models with manual transmission are equipped with a clutch interlocking ignition system. The clutch pedal must be fully pressed to start the vehicle.

Fully press the clutch pedal before shifting gears. As you release the clutch pedal, lightly press the accelerator pedal.

This transmission has a "creeper" first gear which should be used to start from a standing position when carrying a payload or towing a trailer. Damage to the clutch can result from starting in second or third gear with a loaded vehicle. An unloaded vehicle may be launched in second gear. Use each gear in numerical order – do not skip a gear.

NOTE: When loaded, pulling a trailer or on a grade, the truck should always start in first gear and not skip gears.

Recommended Vehicle Shift Speeds

To utilize your manual transmission efficiently for both fuel economy and performance, it should be upshifted as listed in recommended shift speed chart. Shift at the vehicle speeds listed for acceleration. When heavily loaded or pulling a trailer these recommended up-shift speeds may not apply.

Maximum Recommended Up-Shift Speeds

Gear Selection	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6
Maximum Speed	7 mph (11 km/h)	15 mph (24 km/h)	25 mph (40 km/h)	40 mph (64 km/h)	45 mph (72 km/h)

Downshifting

Moving from a high gear down to a lower gear is recommended to preserve brakes when driving down steep hills. In addition, downshifting at the right time provides better acceleration when you desire to resume speed. Downshift progressively. Do not skip gears to avoid overspeeding the engine and clutch.

WARNING!

Do not downshift for additional engine braking on a slippery surface. The drive wheels could lose their grip and the vehicle could skid.

CAUTION!

When descending a hill, be very careful to downshift one gear at a time to prevent overspeeding the engine which can cause valve damage, and/or clutch disc damage even if the clutch pedal is pressed.

Maximum Recommended Downshift Speeds

CAUTION!

Failure to follow the recommended downshifting speeds may cause the engine to overspeed and/or damage the clutch disc even if the clutch pedal is pressed.

Maximum Recommended Downshifting Speeds

Gear Selection	6 to 5	5 to 4	4 to 3	3 to 2	2 to 1
Maximum Speed	68 mph (109 km/h)	50 mph (80 km/h)	32 mph (51 km/h)	19 mph (31 km/h)	10 mph) (16 km/h

CAUTION!

If you skip a gear while downshifting or downshift at too high of a vehicle speed, these conditions may cause the engine to overspeed if too low of a gear is selected and the clutch pedal is released. Damage to the clutch and the transmission can result from skipping a gear while downshifting or downshifting at too high of a vehicle speed even if the clutch pedal is held pressed (i.e., not released).

Reverse Shifting

To shift into REVERSE (R), bring the vehicle to a complete stop. Press the clutch and pause briefly to allow the gear train to stop rotating. Beginning from the NEUTRAL (N) position, move the shift lever in one quick smooth motion straight across and into the REVERSE (R) area (the driver will feel a firm "click" as the shifter passes the "knock-over"). Complete the shift by pulling the shift lever into REVERSE (R).

The "knock-over" prevents the driver from accidentally entering the REVERSE (R) shift area and warns the driver

that they are about to shift the transmission into REVERSE (R). Due to this feature, a slow shift to REVERSE (R) can be perceived as a high shift effort.

To shift out of REVERSE bring the vehicle to a complete stop and press the clutch. Shifting out of REVERSE prior to a complete stop may cause high shift effort.

POWER TAKE OFF OPERATION — IF EQUIPPED (CHASSIS CAB ONLY)

This vehicle when equipped with either the AS69RC automatic six-speed or G-56 manual six-speed transmissions, will allow for an aftermarket upfit with a transmission driven PTO (power take off). The customer will have the ability to operate the PTO in either a "stationary" or "mobile" mode. The vehicles will be factory set to the "stationary" mode. To select 'mobile mode' You will need to enter the commercial vehicle menu on the EVIC screen and select mobile PTO mode. Details of the PTO selection modes and further PTO information is available at the Ram Truck Bodybuilders web site. www.rambodybuilder.com

AS69RC Six-Speed Automatic Transmission Only

The PTO drive gear (part of the AS69RC) operates at torque converter turbine speed. The turbine speed will be less than engine speed when the torque converter clutch is not engaged and will be same as engine speed when the torque converter clutch is engaged.

Stationary Mode

To operate the PTO in this mode the vehicle must meet the following conditions:

- Be in PARK position (vehicles equipped with automatic transmission)
- PTO switch has been activated
- Parking brake applied (vehicles equipped with manual transmission)

- Brake pedal must not be applied
- Vehicle engine must be running
- No vehicle, brake or clutch switch faults present
- PTO must be correctly installed using the vehicle provided circuits

The Electronic Vehicle Information Center (EVIC) will display a "PTO On" message for five seconds if the above conditions are met. Otherwise, the EVIC will display a message "To Operate PTO Shift To Park" indicating what operator action should be taken to engage the PTO mode.

The customer has the choice to operate the PTO by utilizing the cruise control switches or by utilizing a remote control (provided by the PTO supplier). To operate the feature using the cruise control switches, the customer must first activate the PTO switch which will turn on the PTO. In order to increase or decrease the engine idle speed, to optimize the PTO function, the "RESUME/ACCEL" and "DECEL" cruise switches can be used respectively. To disengage PTO operation and return to "standard vehicle operation" simply toggle the PTO switch to the OFF position.

The torque converter clutch (TCC) will automatically engage at engine speeds above 1,200 RPM (engine speed) in PTO stationary mode. Once engaged, the TCC will remain applied and will not disengage until the engine speed falls below 1,000 RPM. TCC engagement is desirable for certain types of PTO applications (Automatic Transmission Only).

To operate the PTO via a remote switch, the customer must make sure the above conditions are met. It is vital for proper operation that the PTO and remote have been installed correctly, paying special attention to ensure the vehicle provided wiring has been connected properly. This is the responsibility of the installer of the PTO and switches/remote system. It is the responsibility of the

PTO manufacturer to ensure that their electrical (switches and remote) system is compatible with the vehicle's electrical architecture and software functionality.

NOTE: Single set speed can be programmed via the PTO menu on the EVIC screen. Further details are available at the Ram Truck Bodybuilders website. www.rambodybuilder.com **www.ramtrucks.com**.

Mobile Mode

To operate the PTO in this mode the vehicle must meet the following conditions:

- Mobile mode is activated via the menu on the EVIC screen.
- (on/off) switch has been activated
- Vehicles with automatic transmission must be in PARK or DRIVE
- Parking brake must not be applied
- Brake pedal must not be applied
- No vehicle, brake or clutch switch faults present
- Vehicle engine must be running
- PTO must be correctly installed using the vehicle provided circuits

The customer may choose to use the PTO while the vehicle is moving. To do so, the PTO function must be activated prior to taking the vehicle out of PARK. This is accomplished by activating the upfitter-provided PTO on/off switch. At this point, the customer may place the vehicle in a forward or reverse gear and have PTO operation once the vehicle begins to move. To disengage PTO operation and return to "standard vehicle operation" simply toggle the on/off switch to the OFF position.

NOTE: For application specific information with respect to PTO and pump requirements and additional vehicle information (wiring schematics, preset idle values, engine speed limits, and vehicle hardware and software requirements) please refer to the Body Builders Guide by accessing **www.rambodybuilder.com** and choosing the appropriate links.

Power Take Off – Aftermarket Installation

If you did not order the PTO (Power Take Off) Prep Package from the factory and want to convert your vehicle, refer to the Body Builder's Guide at **www.rambodybuilder.com** or contact the manufacturer directly at (866) 205–4102 (toll free).

ENGINE RUNAWAY

Diesel engine runaway is a rare condition affecting diesel engines, where the engine consumes its own lubrication oil and runs at higher and higher RPM until it overspeeds to a point where it destroys itself due to either mechanical failure or engine seizure through lack of lubrication.

WARNING!

In case of engine runaway due to flammable fumes from fuel spills or turbocharger oil leaks being sucked into the engine, do the following to help avoid personal injury and/or vehicle damage:
1. Turn the ignition switch to the OFF position.
2. Using a CO2 or dry chemical type fire extinguisher, direct the spray from the fire extinguisher into the grille on the passenger side so that the spray enters the engine air intake.
The inlet for the engine air intake is located behind the passenger side headlamp and receives air through the grille.

FUEL REQUIREMENTS

Use good quality diesel fuel from a reputable supplier in your vehicle. Federal law requires that you must fuel this vehicle with Ultra Low Sulfur Highway Diesel fuel (15 ppm Sulfur maximum) and prohibits the use of Low Sulfur Highway Diesel fuel (500 ppm Sulfur maximum) to avoid damage to the emissions control system. For most year-round service, No. 2 diesel fuel meeting ASTM (formerly known as the American Society for Testing and Materials) specification D-975 Grade S15 will provide good performance. If the vehicle is exposed to extreme cold (below 20°F or -7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters.

WARNING!

Do not use alcohol or gasoline as a fuel blending agent. They can be unstable under certain conditions and hazardous or explosive when mixed with diesel fuel.

Diesel fuel is seldom completely free of water. To prevent fuel system trouble, drain the accumulated water from the fuel/water separator using the fuel/water separator drain provided on both fuel filters. If you buy good quality fuel and follow the cold weather advice above, fuel conditioners should not be required in your vehicle. If available in your area, a high cetane “premium” diesel fuel may offer improved cold-starting and warm-up performance.

CAUTION!

If the "Water in Fuel Indicator Light" remains on, DO NOT START engine before you drain the water from the fuel filter(s) to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.

Fuel Specifications

The Cummins® diesel engine has been developed to take advantage of the high energy content and generally lower cost No. 2 Ultra Low Sulfur diesel fuel or No. 2 Ultra Low Sulfur climatized diesel fuels. Experience has shown that it also operates on No. 1 Ultra Low Sulfur diesel fuels or other fuels within specification.

NOTE:

- A maximum blend of 20% biodiesel meeting ASTM specification D-6751 may be used with your Cummins® diesel engine.
- In addition, commercially available fuel additives are not necessary for the proper operation of your Cummins® diesel engine.
- No. 1 Ultra Low Sulfur diesel fuel should only be used where extended arctic conditions (-10°F or -23°C) exist.

Bio-Diesel Fuel Requirements

Chassis Cab Models

A maximum blend of 5% biodiesel meeting ASTM specification D975 may be used with your Cummins diesel engine. If operation with Biodiesel blends greater than 5% but not greater than 20% (B6 B20) is desired, the truck

must first be reconfigured by an authorized Ram dealer and the provisions in the following section must be adhered to.

Pickup Models And Chassis Cab Models Ordered With B20 Option

Your vehicle has been validated and approved for the use of Biodiesel in blends up to 20% (B20) provided that you comply with the requirements outlined below. It is important that you understand and comply with these requirements. Failure to comply with Oil Change requirements for vehicles operating on biodiesel blends up to B20 will result in premature engine wear. Such wear is not covered by the New Vehicle Limited Warranty.

Biodiesel is a fuel produced from renewable resources typically derived from animal fat, rapeseed oil (Rapeseed Methyl Ester (RME) base), or soybean oil (Soy Methyl Ester (SME or SOME) base). Biodiesel fuel has inherent limitations which require that you understand and adhere to the following requirements if you use blends of Biodiesel greater then 5% but not greater than 20% (B6-B20). There are no unique restrictions for the use of B5. Use of blends greater than 20% is not approved. Use of blends greater than 20% can result in engine damage. Such damage is not covered by the New Vehicle Limited Warranty.

Fuel Quality - Must Comply With ASTM Standards

The quality of Biodiesel fuel may vary widely. Only fuel produced by a BQ9000 supplier to the following specifications may be blended to meet Biodiesel blend (B6 - B20) fuel meeting ASTM specification D-7467:

- Pretrodiesel fuel meeting ASTM specification D-975 and Biodiesel fuel (B100) meeting ASTM specification D-6751.

Fuel Oxidation Stability - Must Use Fuel Within Six Months Of Manufacture

Biodiesel fuel has poor oxidation stability which can result in long term storage problems. Fuel produced to approved ASTM standards, if stored properly, provides for protection against fuel oxidation for up to six months.

Fuel Water Separation - Must Use Mopar/Cummins Approved Fuel Filter Elements

You must use Mopar/Cummins approved fuel filter elements in both your engine mounted filter and frame mounted filter.

Biodiesel fuel has a natural affinity to water and water accelerates microbial growth. Your Mopar/Cummins filtration system is designed to provide adequate fuel water separation capabilities.

Bio-Diesel Fuel Properties – Low Ambient Temperatures

Biodiesel fuel may gel or solidify at low ambient temperatures, which may pose problems for both storage and operation. Precautions can be necessary at low ambient temperatures, such as storing the fuel in a heated building or a heated storage tank, or using cold temperature additives.

Fuel In Oil Dilution - Must Adhere To Required Oil Change Interval

Fuel dilution of lubricating oil has been observed with the use of Biodiesel fuel. Fuel in oil must not exceed 5 percent. To ensure this limit is met your oil change interval must be maintained to the following schedule:

- Ram PickUp 2500/3500 Only – 15,000 Miles*
- Ram 3500/4500/5500 Chassis Cab – 12,500 Miles*

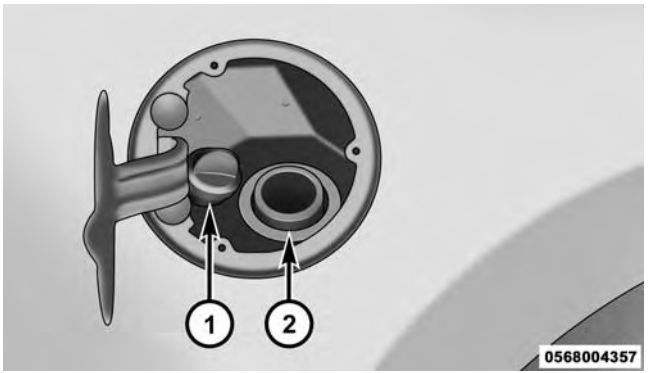
(*unless otherwise notified with a oil service message)

CAUTION!

- **Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) pickup or 12,500 miles (20 000 km) chassis cab if operation occurs with greater than 5% biodiesel blends. Oil change intervals should not exceed 6 months in either case. Failure to comply with these Oil Change requirements for vehicles operating on biodiesel blends up to B20 may result in premature engine wear. Such wear is not covered by the New Vehicle Limited Warranty.**
- **B20 Biodiesel capable: The engine may suffer severe damage if operated with concentrations of Biodiesel higher than 20%.**

ADDING FUEL – 2500/3500 DIESEL MODELS

1. Open the fuel filler door.



Diesel Fuel and Diesel Exhaust Fluid Fill Location

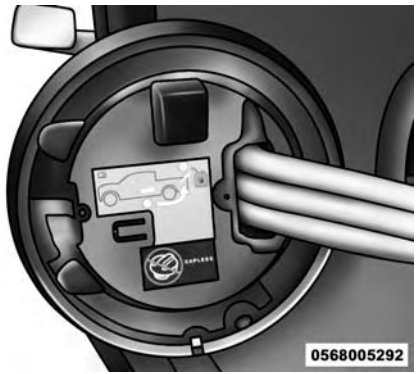
1 — Diesel Exhaust Fluid Fill Location
2 — Diesel Fuel Fill Location

2. There is no fuel filler cap. A flapper door inside the filler pipe seals the system.
3. Insert the fuel nozzle fully into the filler pipe – the nozzle opens and holds the flapper door while refueling.
4. Fill the vehicle with fuel – when the fuel nozzle "clicks" or shuts off the fuel tank is full.
5. Remove the fuel nozzle and close the fuel door.

Emergency Fuel Can Refueling

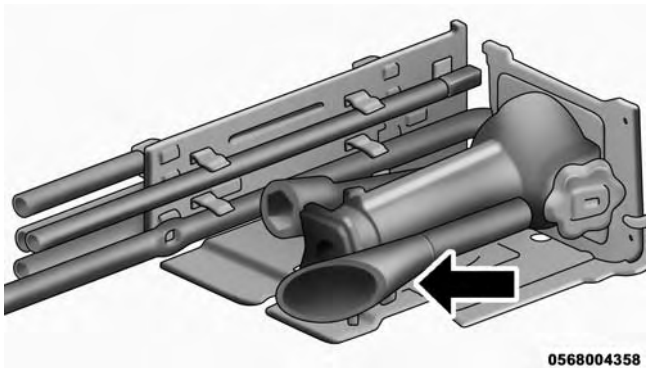
Most fuel cans will not open the flapper door.

A funnel is provided to open the flapper door to allow emergency refueling with a fuel can.



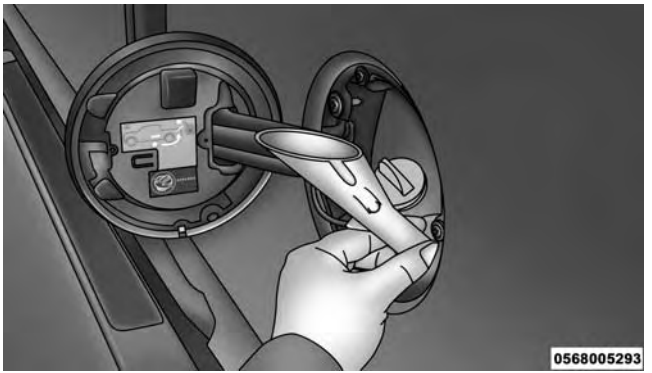
Diesel Fuel and DEF Fluid Filler Door

1. Retrieve fuel funnel from the jack kit located under the front passenger seat.



Fuel Fill Funnel Location 2500/3500 Models

2. Insert funnel into same filler pipe opening as the fuel nozzle.



Emergency Fuel Fill Location

3. Ensure funnel is inserted fully to hold flapper door open.
4. Pour fuel into funnel opening.
5. Remove funnel from filler pipe, clean off prior to putting back in the jack kit.

CAUTION!

To avoid fuel spillage and overfilling, do not "top off" the fuel tank after filling.

WARNING!

- **Never have any smoking materials lit in or near the vehicle when the fuel door is open or the tank is being filled.**
- **Never add fuel when the engine is running. This is in violation of most state and federal fire regulations and may cause the "Malfunction Indicator Light" to turn on.**
- **A fire may result if fuel is pumped into a portable container that is inside of a vehicle. You could be burned. Always place fuel containers on the ground while filling.**

ADDING FUEL – CHASSIS CAB MODELS

CAUTION!

To avoid fuel spillage and overfilling, do not "top off" the fuel tank after filling.

NOTE:

- When the fuel nozzle "clicks" or shuts off, the fuel tank is full.
- Tighten the fuel filler cap until you hear a "clicking" sound. This is an indication that the fuel filler cap is properly tightened.
- Make sure that the fuel filler cap is tightened each time the vehicle is refueled.

WARNING!

A fire may result if fuel is pumped into a portable container that is on a truck bed. You could be burned. Always place fuel containers on the ground while filling.

Fuel Filler Cap

If the fuel filler cap is lost or damaged, be sure the replacement cap is for use with this vehicle.

CAUTION!

Damage to the fuel system or emission control system could result from using an improper fuel tank filler tube cap. A poorly fitting cap could let impurities into the fuel system.

WARNING!

- **Never have any smoking materials lit in or near the vehicle when the fuel filler cap is removed or the tank filled.**
- **Never add fuel to the vehicle when the engine is running.**

Avoid Using Contaminated Fuel

Fuel that is contaminated by water or dirt can cause severe damage to the engine fuel system. Proper maintenance of the engine fuel filter and fuel tank is essential. Refer to "Maintenance Procedures" in "Maintaining Your Vehicle" for further information.

Bulk Fuel Storage – Diesel Fuel

If you store quantities of fuel, good maintenance of the stored fuel is also essential. Fuel contaminated with water will promote the growth of "microbes." These

microbes form “slime” that will clog fuel filters and lines. Drain condensation from the supply tank and change the line filter on a regular basis.

NOTE: When a diesel engine is allowed to run out of fuel, air is pulled into the fuel system.

If the vehicle will not start, refer to “Maintenance Procedures/Priming If The Engine Has Run Out Of Fuel” in “Maintaining Your Vehicle” for further information.

WARNING!

Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.

Diesel Exhaust Fluid Storage

Diesel Exhaust Fluid (DEF) is considered a very stable product with a long shelf life. If DEF is kept in temperatures between 10° to 90°F (-12° to 32°C), it will last a minimum of one year.

DEF is subject to freezing at the lowest temperatures. For example, DEF may freeze at temperatures at or below 12° F (-11° C). The system has been designed to operate in this environment.

NOTE: When working with DEF, it is important to know that:

- Any containers or parts that come into contact with DEF must be DEF compatible (plastic or stainless steel). Copper, brass, aluminum, iron or non-stainless steel should be avoided as they are subject to corrosion by DEF.
- If DEF is spilled, it should be wiped up completely.

Adding Diesel Exhaust Fluid

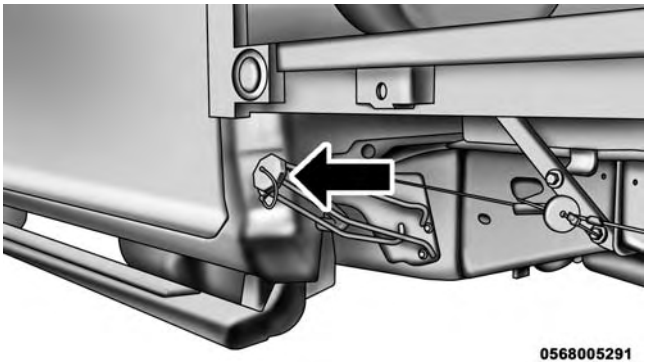
The DEF gauge (located on the instrument cluster) will display the level of DEF remaining in the tank. Refer to "Instrument Cluster" and "Instrument Cluster Descriptions" in "Understanding Your Instrument Panel" for further information.

NOTE: Driving conditions (altitude, vehicle speed, load, etc.) will effect the amount of DEF that is used in your vehicle.

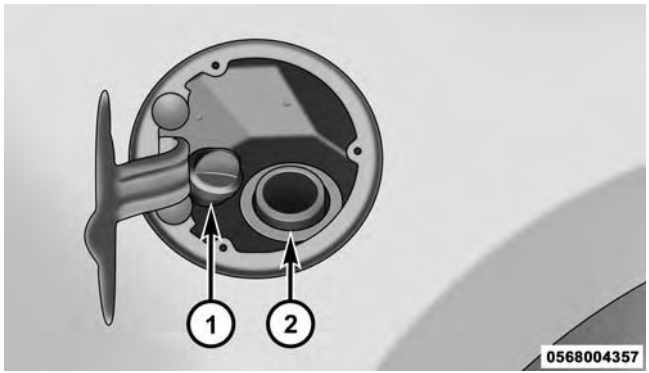
DEF Fill Procedure

NOTE: Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for the correct fluid type.

1. Remove cap from DEF tank (located on drivers side of the vehicle or in fuel door).



DEF Filler Cap Chassis Cab Models

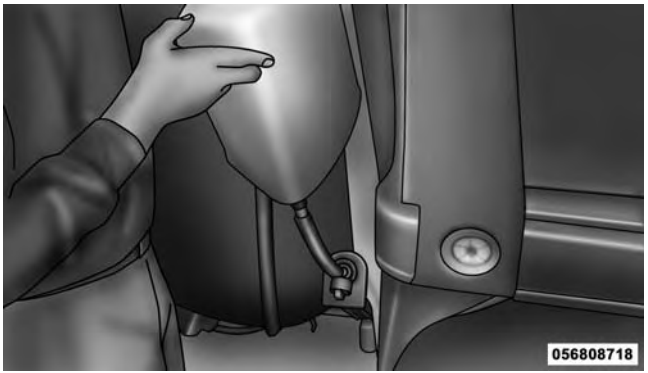


DEF Filler Cap and Fuel Fill 1500/2500/3500 Models

1 — Diesel Exhaust Fluid Fill Location

2 — Diesel Fuel Fill Location

2. Insert DEF fill adapter/nozzle into DEF tank filler neck.



Filling The DEF Tank

CAUTION!

- **To avoid DEF spillage, and possible damage to the DEF tank from overfilling, do not "top off" the DEF tank after filling.**

(Continued)

CAUTION! ***(Continued)***

- **DO NOT OVERFILL. DEF will freeze below 12 degrees F (-11 degrees C). The DEF system is designed to work in temperatures below the DEF freezing point, however, if the tank is overfilled and freezes, the system could be damaged.**
- **When DEF is spilled, clean the area immediately with water or use an absorbent material to soak up and spills on the ground.**
- **Do not attempt to start your engine if DEF is accidentally added to the diesel fuel tank as it can result in severe damage to your engine, including but not limited to failure of the fuel pump and injectors.**

3. Stop filling the DEF tank immediately when any of the following happen: DEF stops flowing from the fill bottle into the DEF tank, DEF splashes out the filler neck, or a DEF pump nozzle automatically shuts off.
4. Reinstall cap onto DEF tank.

Filling the DEF tank in cold climates

Since DEF will begin to freeze at 12°F (-11°C), your vehicle is equipped with an automatic DEF heating system. This allows the DEF injection system to operate properly at temperatures below 12°F (-11°C). If your vehicle is not in operation for an extended period of time with temperatures below 12°F (-11°C), the DEF in the tank may freeze. If the tank is overfilled and freezes, it could be damaged. Therefore, do not overfill the DEF tank.

Extra care should be taken when filling with portable containers to avoid overfilling. Note the level of the DEF gauge in your instrument cluster. On pickup applications, you may safely add a maximum of 2 gallons of DEF from portable containers when your DEF gauge is reading ½ full. On Chassis Cab applications a maximum of 2 gallons may be added when the DEF gauge is reading ¾ full.

TRAILER TOWING

In this section you will find safety tips and information on limits to the type of towing you can reasonably do with your vehicle. Before towing a trailer, carefully review this information to tow your load as efficiently and safely as possible.

To maintain the New Vehicle Limited Warranty coverage, follow the requirements and recommendations in this manual concerning vehicles used for trailer towing.

Common Towing Definitions

The following trailer towing related definitions will assist you in understanding the following information:

Gross Vehicle Weight Rating (GVWR)

The GVWR is the total allowable weight of your vehicle. This includes driver, passengers, cargo and tongue weight. The total load must be limited so that you do not exceed the GVWR. Refer to “Vehicle Loading/Vehicle Certification Label” in “Starting and Operating” for further information.

Gross Trailer Weight (GTW)

The GTW is the weight of the trailer plus the weight of all cargo, consumables and equipment (permanent or temporary) loaded in or on the trailer in its "loaded and ready for operation" condition. The recommended way to measure GTW is to put your fully loaded trailer on a vehicle scale. The entire weight of the trailer must be supported by the scale.

Gross Combination Weight Rating (GCWR)

The GCWR is the total permissible weight of your vehicle and trailer when weighed in combination.

Gross Axle Weight Rating (GAWR)

The GAWR is the maximum capacity of the front and rear axles. Distribute the load over the front and rear axles evenly. Make sure that you do not exceed either front or rear GAWR. Refer to "Vehicle Loading/Vehicle Certification Label" in "Starting and Operating" for further information.

WARNING!

It is important that you do not exceed the maximum front or rear GAWR. A dangerous driving condition can result if either rating is exceeded. You could lose control of the vehicle and have an accident.

Tongue Weight (TW)

The tongue weight is the downward force exerted on the hitch ball by the trailer. In most cases it should not be less than 10% of the trailer load. You must consider this as part of the load on your vehicle.

Frontal Area

The frontal area is the maximum height multiplied by the maximum width of the front of a trailer.

Trailer Sway Control

The trailer sway control can be a mechanical telescoping link that can be installed between the hitch receiver and the trailer tongue that typically provides adjustable friction associated with the telescoping motion to dampen any unwanted trailer swaying motions while traveling.

If equipped, the electronic Trailer Sway Control (TSC) recognizes a swaying trailer and automatically applies individual wheel brakes and/or reduces engine power to attempt to eliminate the trailer sway.

Weight-Carrying Hitch

A weight-carrying hitch supports the trailer tongue weight, just as if it were luggage located at a hitch ball or some other connecting point of the vehicle. These kinds of hitches are the most popular on the market today and they are commonly used to tow small and medium sized trailers.

Weight-Distributing Hitch

A weight-distributing system works by applying leverage through spring (load) bars. They are typically used for heavier loads to distribute trailer tongue weight to the tow vehicle's front axle and the trailer axle(s). When used in accordance with the manufacturer's directions, it provides for a more level ride, offering more consistent steering and brake control thereby enhancing towing safety. The addition of a friction / hydraulic sway control also dampens sway caused by traffic and crosswinds and contributes positively to tow vehicle and trailer stability.

Trailer sway control and a weight distributing (load equalizing) hitch are recommended for heavier Tongue Weights (TW) and may be required depending on vehicle and trailer configuration / loading to comply with Gross Axle Weight Rating (GAWR) requirements.

WARNING!

- **An improperly adjusted Weight Distributing Hitch system may reduce handling, stability, braking performance, and could result in a collision.**
- **Weight Distributing Systems may not be compatible with Surge Brake Couplers. Consult with your hitch and trailer manufacturer or a reputable Recreational Vehicle dealer for additional information.**

Fifth-Wheel Hitch

The fifth-wheel hitch is a special high platform with a coupling that mounts over the rear axle of the tow vehicle in the truck bed. It connects a vehicle and fifth-wheel trailer with a coupling king pin.

Gooseneck Hitch

The gooseneck hitch employs a pivoted coupling arm which attaches to a ball mounted in the bed of a pickup truck. The coupling arm connects to the hitch mounted over the rear axle in the truck bed.

Trailer Hitch Classification

The following chart provides the industry standard for the maximum trailer weight a given trailer hitch class can tow and should be used to assist you in selecting the correct trailer hitch for your intended towing condition.

Trailer Hitch Classification Definitions	
Class	**Max. Trailer Hitch Industry Standards**
Class I - Light Duty	2,000 lbs (907 kg)
Class II - Medium Duty	3,500 lbs (1 587 kg)
Class III - Heavy Duty	5,000 lbs (2 268 kg)
Class IV - Extra Heavy Duty	10,000 lbs (4 540 kg)
Fifth Wheel/Gooseneck	Greater than 10,000 lbs (4 540 kg)
Refer to the "Trailer Towing Weights (Maximum Trailer Weight Ratings)" for the Maximum Gross Trailer Weight (GTW) towable for your given drivetrain.	
All trailer hitches should be professionally installed on your vehicle.	

Trailer Towing Weights (Maximum Trailer Weight Ratings)

The rear bumper is intended to tow trailers up to a 5,000 lbs (2 268 kg) without added equipment or alterations to the standard equipment.

Ram 2500 & 3500 Diesel

	2500 ST SLT Bighorn/Lonestar Laramie Outdoorsman	3500 ST SLT Bighorn/Lonestar Laramie Outdoorsman
6.7L Cummins® Turbo Diesel 6-Speed Manual Transmission	Max Towing: 16,710 lbs (7 579 kg) Max Payload: 2,880 lbs (1 306 kg)	Max Towing: 18,200 lbs (8 255 kg) Max Payload: 6,640 lbs (3 011 kg)
6.7L Cummins® Turbo Diesel 6-Speed Automatic Transmission	Max Towing: 17,810 lbs (8 078 kg) Max Payload: 2,980 lbs (1 351 kg)	Max Towing: 30,060 lbs (13 634 kg) Max Payload: 6,710 lbs (3 043 kg)

Chassis Cab 3500 Diesel

	ST/SLT/Laramie
6.7L Cummins® Turbo Diesel 6-Speed Manual Transmission	Max Towing: 19,250 lbs (8 731 kg) Max Payload: 6,080 lbs (2 757 kg)
6.7L Cummins® Turbo Diesel 6-Speed AISIN Automatic Transmission	Max Towing: 22,750 lbs (10 319 kg) Max Payload: 5,910 lbs (2 680 kg)

Chassis Cab 4500 Diesel

	ST/SLT/Laramie
6.7L Cummins® Turbo Diesel 6-Speed Manual Transmission	Max Towing: 20,200 lbs (9 162 kg) Max Payload: 8,741 lbs (3 964 kg)
6.7L Cummins® Turbo Diesel 6-Speed AISIN Automatic Transmission	Max Towing: 24,650 lbs (11 181 kg) Max Payload: 8,661 lbs (3 928 kg)

Chassis Cab 5500 Diesel

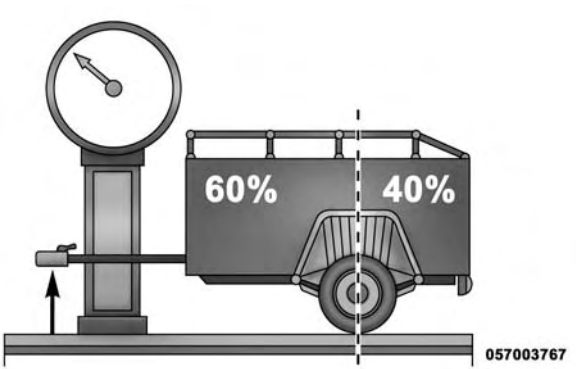
	ST/SLT/Laramie
6.7L Cummins® Turbo Diesel 6-Speed Manual Transmission	Max Towing: 20,150 lbs (9 139 kg) Max Payload: 11,711 lbs (5 312 kg)
6.7L Cummins® Turbo Diesel 6-Speed AISIN Automatic Transmission	Max Towing: 29,600 lbs (13 426 kg) Max Payload: 11,646 lbs (5 282 kg)

NOTE: For additional trailer towing information (maximum trailer weight ratings) refer to the following website addresses:

- **http://www.ramtrucks.com**
- **http://www.ramtruck.ca (Canada)**

Trailer And Tongue Weight

Always load a trailer with 60% to 65% of the weight in the front of the trailer. This places 10% to 15% of the GTW on the tow hitch of your vehicle. Loads balanced over the wheels or heavier in the rear can cause the trailer to sway **severely** side to side which will cause loss of control of the vehicle and trailer. Failure to load trailers heavier in front is the cause of many trailer collisions. Never exceed the maximum tongue weight stamped on your trailer hitch.



Consider the following items when computing the weight on the rear axle of the vehicle:

- The tongue weight of the trailer
- The weight of any other type of cargo or equipment put in or on your vehicle
- The weight of the driver and all passengers.

NOTE: Remember that everything put into or on the trailer adds to the load on your vehicle. Also, additional factory-installed options or dealer-installed options must be considered as part of the total load on your vehicle. Refer to "Tire Safety Information/Tire and Loading Information Placard" in "Starting and Operating" for further information.

Towing Requirements

To promote proper break-in of your new vehicle drivetrain components the following guidelines are recommended:

CAUTION!

- **Do not tow a trailer at all during the first 500 miles (805 km) the new vehicle is driven. The engine, axle or other parts could be damaged.**
- **Then, during the first 500 miles (805 km) that a trailer is towed, do not drive over 50 mph (80 km/h) and do not make starts at full throttle. This helps the engine and other parts of the vehicle wear in at the heavier loads.**

WARNING!

Improper towing can lead to a collision. Follow these guidelines to make your trailer towing as safe as possible:

- **Make certain that the load is secured in the trailer and will not shift during travel. When trailering cargo that is not fully secured, dynamic load shifts can occur that may be difficult for the driver to control. You could lose control of your vehicle and have a collision.**
- **When hauling cargo or towing a trailer, do not overload your vehicle or trailer. Overloading can cause a loss of control, poor performance or damage to brakes, axle, engine, transmission, steering, suspension, chassis structure or tires.**

(Continued)

WARNING! ***(Continued)***

- **Safety chains must always be used between your vehicle and trailer. Always connect the chains to the hook retainers of the vehicle hitch. Cross the chains under the trailer tongue and allow enough slack for turning corners.**
- **Vehicles with trailers should not be parked on a grade. When parking, apply the parking brake on the tow vehicle. Put the tow vehicle transmission in PARK. For four-wheel drive vehicles, make sure the transfer case is not in NEUTRAL. Always, block or "chock" the trailer wheels.**
- **GCWR must not be exceeded.**
- **Total weight must be distributed between the tow vehicle and the trailer such that the following four ratings are not exceeded:**

1. GVWR

(Continued)

WARNING! ***(Continued)***

2. GTW
3. GAWR
4. Tongue weight rating for the trailer hitch utilized.

Towing Requirements – Tires

- Do not attempt to tow a trailer while using a compact spare tire.
- Proper tire inflation pressures are essential to the safe and satisfactory operation of your vehicle. Refer to "Tires – General Information" in "Starting and Operating" for proper tire inflation procedures.
- Check the trailer tires for proper tire inflation pressures before trailer usage.
- Check for signs of tire wear or visible tire damage before towing a trailer. Refer to "Tires – General Information" in "Starting and Operating" for the proper inspection procedure.
- When replacing tires, refer to "Tires – General Information" in "Starting and Operating" for proper tire replacement procedures. Replacing tires with a higher load carrying capacity will not increase the vehicle's GVWR and GAWR limits.

Towing Requirements – Trailer Brakes

- Do **not** interconnect the hydraulic brake system or vacuum system of your vehicle with that of the trailer. This could cause inadequate braking and possible personal injury.

- An electronically actuated trailer brake controller is required when towing a trailer with electronically actuated brakes. When towing a trailer equipped with a hydraulic surge actuated brake system, an electronic brake controller is not required.
- Trailer brakes are recommended for trailers over 1,000 lbs (454 kg) and required for trailers in excess of 1,653 lbs (750 kg).

CAUTION!

If the trailer weighs more than 1,000 lbs (454 kg) loaded, it should have its own brakes and they should be of adequate capacity. Failure to do this could lead to accelerated brake lining wear, higher brake pedal effort, and longer stopping distances.

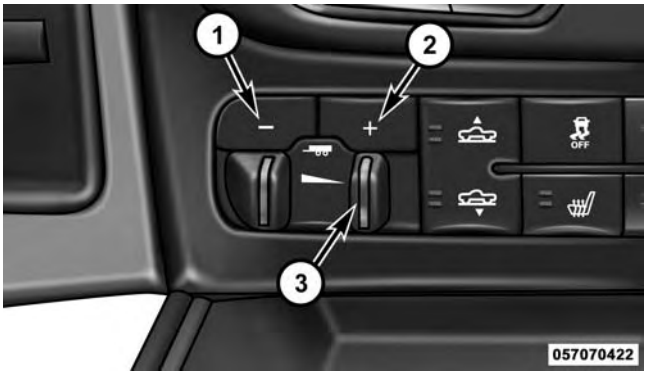
WARNING!

- **Do not connect trailer brakes to your vehicle's hydraulic brake lines. It can overload your brake system and cause it to fail. You might not have brakes when you need them and could have an accident.**
- **Towing any trailer will increase your stopping distance. When towing you should allow for additional space between your vehicle and the vehicle in front of you. Failure to do so could result in an accident.**

Integrated Trailer Brake Module – If Equipped

Your vehicle may have an Integrated Trailer Brake Module (ITBM) for Electric and Electric Over Hydraulic (EOH) trailer brakes.

NOTE: This module has been designed and verified with electric trailer brakes and new electric over hydraulic systems. Some previous EOH systems may not be compatible with ITBM.



1 — GAIN Adjustment Button
2 — GAIN Adjustment Button
3 — Manual Brake Control Lever

The user interface consists of the following:

Manual Brake Control Lever

Slide the manual brake control lever to the right to activate power to the trailer's electric brakes independent of the tow vehicle's brakes. If the manual brake control lever is activated while the brake is also applied, the greater of the two inputs determines the power sent to the trailer brakes.

The trailer and the vehicle's brake lamps will come on when either vehicle braking or manual trailer brakes are applied.

Trailer Brake Status Indicator Light

This light indicates the trailer electrical connection status.

If no electrical connection is detected after the ignition is turned on, pressing the GAIN adjustment button or sliding the manual brake control lever will display the GAIN setting for 10 seconds and the "Trailer Brake Status Indicator Light" will not be displayed.

If a fault is detected in the trailer wiring or the Integrated Trailer Brake Module (ITBM), the "Trailer Brake Status Indicator Light" will flash.

GAIN Adjustment Buttons (+/-)

Pressing these buttons will adjust the brake control power output to the trailer brakes in 0.5 increments. The GAIN setting can be increased to a maximum of 10 or decreased to a minimum of 0 (no trailer braking).

GAIN

The GAIN setting is used to set the trailer brake control for the specific towing condition and should be changed as towing conditions change. Changes to towing conditions include trailer load, vehicle load, road conditions and weather.

Adjusting GAIN

NOTE: This should only be performed in a traffic free environment at speeds of approximately 20–25 mph (30–40 km/h).

1. Make sure the trailer brakes are in good working condition, functioning normally, and properly adjusted. See your trailer dealer if necessary.
2. Hook up the trailer and make the electrical connections according to the trailer manufacturer's instructions.
3. When a trailer with electric/EOH brakes is plugged in, the trailer connected message should appear in the EVIC (if the connection is not recognized by the ITBM, braking functions will not be available), the GAIN setting will illuminate and the correct type of trailer must be selected from the EVIC options.
4. Press the UP or DOWN button on the steering wheel until "TRAILER TOW" appears on the screen.
5. Press the RIGHT arrow on the steering wheel to enter "TRAILER TOW".
6. Press the UP or DOWN buttons until Trailer Brake Type appears on the screen.

NOTE: 1500 Models Only – Light Electric and Heavy Electric will only be available due to the tow capacities of the vehicle.

7. Press the RIGHT arrow and then press the UP or DOWN buttons until the proper Trailer Brake Type appears on the screen.
8. In a traffic-free environment, tow the trailer on a dry, level surface at a speed of 20–25 mph (30–40 km/h) and squeeze the manual brake control lever completely.

9. If the trailer wheels lockup (indicated by squealing tires), reduce the GAIN setting; if the trailer wheels turn freely, increase the GAIN setting.

Repeat Steps 8 and 9 until the GAIN setting is at a point just below trailer wheel lockup. If towing a heavier trailer, trailer wheel lockup may not be attainable even with the maximum GAIN setting of 10.

	Light Electric	Heavy Electric	Light EOH	Heavy EOH
Type of Trailer Brakes	Electric Trailer Brakes	Electric Trailer Brakes	Electric over Hydraulic Trailer Brakes	Electric over Hydraulic Trailer Brakes
Load	*Under 10,000 lbs	*Above 10,000 lbs	*Under 10,000 lbs	*Above 10,000lbs

* The suggested selection depends and may change depending on the customer preferences for braking performance. Condition of the trailer brakes, driving and road state may also affect the selection.

EVIC Display Messages

The trailer brake control interacts with the Electronic Vehicle Information Center (EVIC). Display messages, along with a single chime, will be displayed when a malfunction is determined in the trailer connection, trailer brake control, or on the trailer. Refer to “Electronic Vehicle Information Center” in “Understanding Your Instrument Panel” for further information.

CAUTION!

Connecting a trailer that is not compatible with the ITBM system may result in reduced or complete loss of trailer braking. There may be a increase in stopping distance or trailer instability which could result in damage to your vehicle, trailer, or other property.

WARNING!

Connecting a trailer that is not compatible with the ITBM system may result in reduced or complete loss of trailer braking. There may be a increase in stopping distance or trailer instability which could result in personal injury.

NOTE:

- An aftermarket controller may be available for use with trailers with air or electric-over-hydraulic trailer brake systems. To determine the type of brakes on your trailer and the availability of controllers, check with your trailer manufacturer or dealer.
- Removal of the ITBM will cause errors and it may cause damage to the electrical system and electronic modules of the vehicle. See your authorized dealer if an aftermarket module is to be installed.

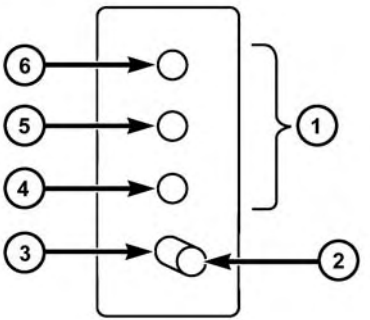
Towing Requirements – Trailer Lights And Wiring

Whenever you pull a trailer, regardless of the trailer size, stoplights and turn signals on the trailer are required for motoring safety.

The Trailer Tow Package may include a four- and seven-pin wiring harness. Use a factory approved trailer harness and connector.

NOTE: Do not cut or splice wiring into the vehicles wiring harness.

The electrical connections are all complete to the vehicle but you must mate the harness to a trailer connector. Refer to the following illustrations.



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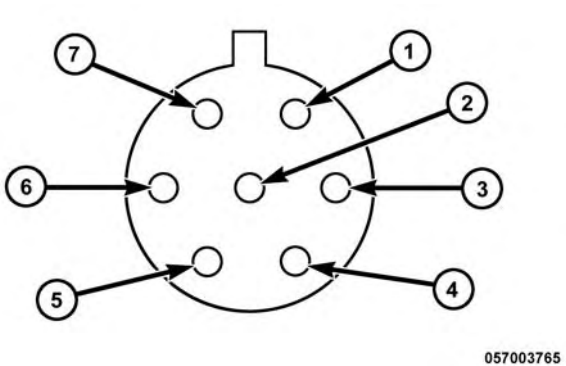
Four-Pin Connector

1 — Female Pins	4 — Park
2 — Male Pin	5 — Left Stop/Turn
3 — Ground	6 — Right Stop/Turn



Seven-Pin Connector

1 — Battery
2 — Backup Lamps
3 — Right Stop/Turn
4 — Electric Brakes
5 — Ground
6 — Left Stop/Turn
7 — Running Lamps

Towing Tips

Before setting out on a trip, practice turning, stopping and backing the trailer up in an area away from heavy traffic.

Automatic Transmission

The "DRIVE" range can be selected when towing. The transmission controls include a drive strategy to avoid frequent shifting when towing. However, if frequent shifting does occur while in DRIVE, select "TOW/HAUL" mode or select a lower gear range (using the Electronic Range Select (ERS) switches).

NOTE: Using "TOW/HAUL" mode or selecting a lower gear range (using the ERS switches) while operating the vehicle under heavy loading conditions will improve performance and extend transmission life by reducing excessive shifting and heat build up. This action will also provide better engine braking.

When towing a loaded trailer up steep grades at low speeds (20 mph [32 km/h] or below), holding your vehicle in first gear (using the ERS switches) can help to avoid transmission overheating.

If you regularly tow a trailer for more than 45 minutes of continuous operation, then change the automatic transmission fluid and filter(s) as specified for ″police, taxi, fleet, or frequent trailer towing.″. Refer to “Maintenance Schedule” for the proper maintenance intervals.

NOTE: Check the automatic transmission fluid level before towing (6-speed automatic only).

Tow/Haul Mode

To reduce potential for automatic transmission overheating, turn the “TOW/HAUL” feature ON when driving in hilly areas, or select a lower gear range (using the Electronic Range Select (ERS) switches) on more severe grades.

Electronic Speed Control – If Equipped

- Do not use in hilly terrain or with heavy loads.
- When using the speed control, if you experience speed drops greater than 10 mph (16 km/h), disengage until you can get back to cruising speed.
- Use speed control in flat terrain and with light loads to maximize fuel efficiency.

Cooling System

To reduce potential for engine and transmission overheating, take the following actions:

City Driving

When stopped for short periods of time, shift the transmission into NEUTRAL and increase engine idle speed.

Highway Driving

Reduce speed.

Air Conditioning

Turn off temporarily.

Air Suspension System

To aid in attaching/detaching the trailer from the vehicle, the air suspension system can be used. Refer to "Air Suspension System" in "Starting and Operating" for further information.

NOTE: The vehicle must remain in the engine running position while attaching a trailer for proper leveling of the air suspension system.

DIESEL EXHAUST FLUID

Your vehicle is equipped with a Selective Catalytic Reduction system in order to meet the very stringent diesel emissions standards required by the Environmental Protection Agency. Selective Catalytic Reduction (SCR) is the first and only technology in decades to be as good for the environment as it is good for business and vehicle performance.

The purpose of the SCR system is to reduce levels of NOx (oxides of nitrogen emitted from engines) that are harmful to our health and the environment to an almost near-zero level. Small quantities of Diesel Exhaust Fluid (DEF) are injected into the exhaust upstream of a catalyst where, when vaporized, convert smog-forming nitrogen oxides (NOx) into harmless nitrogen (N2) and water vapor (H2O), two natural components of the air we breathe. You can operate with the comfort that your vehicle is contributing to a cleaner, healthier world environment for this and generations to come.

System Overview

This vehicle is equipped with a Diesel Exhaust Fluid (DEF) injection system and a Selective Catalytic Reduction (SCR) catalyst to meet the emission requirements.

The DEF injection system consists of the following components:

- DEF tank
- DEF pump
- DEF injector
- Electronically-heated DEF lines
- DEF control module
- NOx sensors
- NH3 sensor
- Temperature sensors
- SCR catalyst

The DEF injection system and SCR catalyst enable the achievement of diesel emissions requirements; while maintaining outstanding fuel economy, drivability, torque and power ratings.

Refer to "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for system messages and warnings.

NOTE:

- Your vehicle is equipped with a DEF injection system. You may occasionally hear an audible clicking noise. This is normal operation.
- The DEF pump will run for a period of time after engine shutdown to purge the DEF system. This is normal operation.

WHAT TO DO IN EMERGENCIES

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JUMP STARTING

WARNING!

- **To prevent personal injury or damage to clothing, do not allow battery fluid to contact eyes, skin or fabrics. Do not lean over a battery when connecting jumper cables or allow cable clamps to touch each other. Keep open flames or sparks away from battery vent holes. Always wear eye protection when working with batteries.**
- **Do not use a booster battery or any other booster source that has a greater than 12 Volt system, i.e., do not use a 24 Volt power source.**

NOTE: Replacement batteries should both be of equal size to prevent damage to the vehicle's charging system.

Your vehicle is equipped with two 12 Volt batteries. If it becomes necessary to use a booster battery with jumper cables to start a vehicle's engine because its batteries are discharged, the following procedure should be used:

Set the parking brake and place an automatic transmission in PARK (or NEUTRAL for a manual transmission). Turn off lights, heater and other electrical loads. Observe charge indicator (if equipped) in both batteries. If the indicator (if equipped) is light or yellow on either battery, replace that battery.

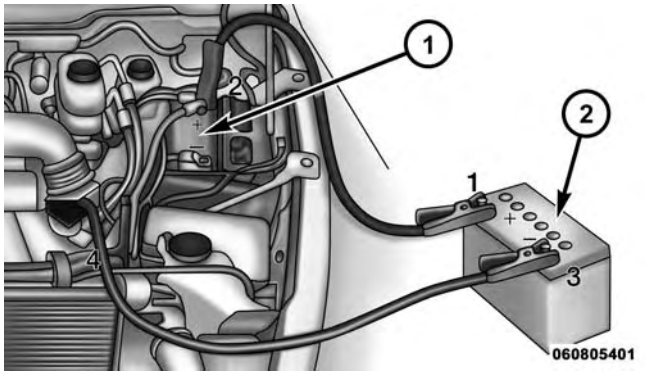
CAUTION!

Use the jump start procedure only when the charge indicator (if equipped) in both batteries is dark in the center. Do not attempt jump starting when either battery charge indicator (if equipped) is bright or yellow. If the charge indicator (if equipped) has a green dot in the center, failure to start is not due to a discharged battery and cranking system should be checked.

1. Attach one jumper cable to the positive terminal of booster battery and the other end of the same cable to the positive terminal of the discharged battery.

WARNING!

Do not permit vehicles to touch each other as this could establish a ground connection and personal injury could result.



1 — Discharged Battery
2 — Booster Battery

2. Connect one end of the other jumper cable to negative (-) post of booster battery. Connect the other end of the jumper cable to a good ground on the engine block of the vehicle with the discharged battery. Make sure a good connection is made, free of dirt and grease.

WARNING!

- **Do not connect the cable to the negative post of the discharge battery. The resulting electrical spark could cause the battery to explode.**
- **During cold weather when temperatures are below freezing point, electrolyte in a discharged battery may freeze. Do not attempt jump starting because the battery could rupture or explode. The battery temperature must be brought up above freezing point before attempting to jump start.**

3. Take care that the clamps from one cable do not inadvertently touch clamps from the other cable. Do not lean over the battery when making connection. The negative connection must provide good electrical conductivity and current carrying capacity.
4. After the engine is started or if the engine fails to start, cables must be disconnected in the following order:
   - Disconnect the negative cable at the engine ground.
   - Disconnect the negative cable at the negative post on booster battery.
   - Disconnect the cable from the positive post of both batteries.

WARNING!

Any procedure other than above could result in:
- **Personal injury caused by electrolyte squirting out the battery vent;**
- **Personal injury or property damage due to battery explosion;**
- **Damage to charging system of booster vehicle or of immobilized vehicle.**

With Portable Starting Unit

There are many types of these units available. Follow the manufacturer's instructions for necessary precautions and operation.

CAUTION!

It is very important that the starting unit operating voltage does not exceed 12 Volts DC or damage to battery, starter motor, alternator, or electrical system may occur.

MAINTAINING YOUR VEHICLE

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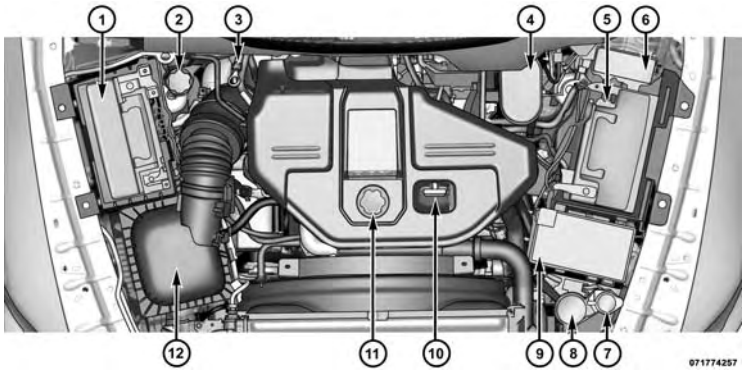
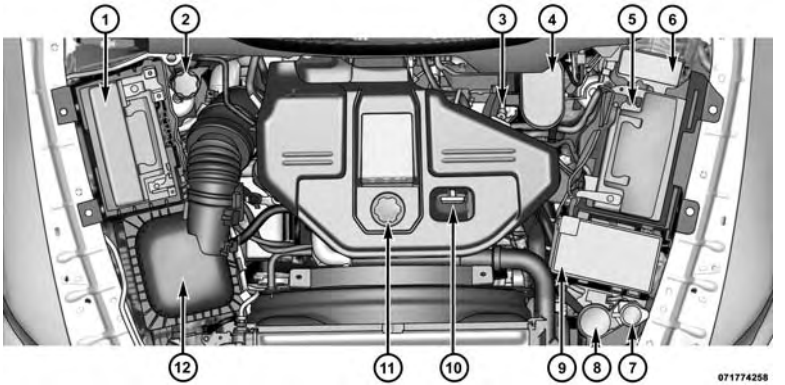
ENGINE COMPARTMENT — 6.7L DIESEL — SIX-SPEED 68RFE (2500/3500 Models Only)



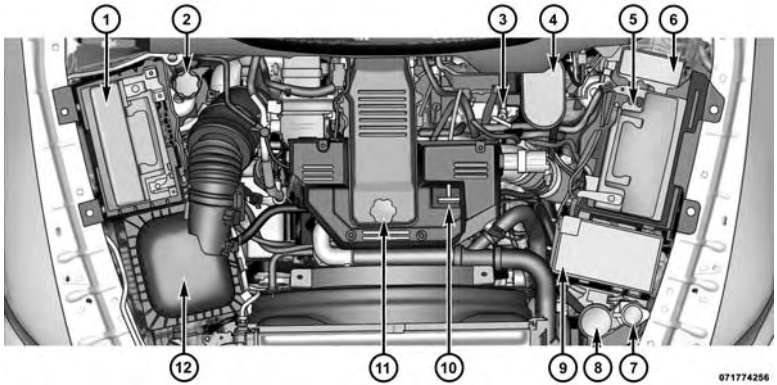
1 — Battery
2 — Engine Coolant Reservoir
3 — Automatic Transmission Dipstick (If Equipped)
4 — Brake Fluid Reservoir
5 — Battery
6 — Aux Power Distribution Center
7 — Washer Fluid Reservoir
8 — Power Steering Fluid Reservoir
9 — Power Distribution Center
10 — Engine Oil Dipstick
11 — Engine Oil Fill
12 — Air Cleaner Filter

ENGINE COMPARTMENT — 6.7L DIESEL — SIX-SPEED AS69RC (3500 Models Only)



1 — Battery
2 — Engine Coolant Reservoir
3 — Automatic Transmission Dipstick (If Equipped)
4 — Brake Fluid Reservoir
5 — Battery
6 — Aux Power Distribution Center
7 — Washer Fluid Reservoir
8 — Power Steering Fluid Reservoir
9 — Power Distribution Center
10 — Engine Oil Dipstick
11 — Engine Oil Fill
12 — Air Cleaner Filter

ENGINE COMPARTMENT — 6.7L DIESEL (CHASSIS CAB MODELS ONLY)



1 — Battery
2 — Engine Coolant Reservoir
3 — Automatic Transmission Dipstick (If Equipped)
4 — Brake Fluid Reservoir
5 — Battery
6 — Aux Power Distribution Center
7 — Washer Fluid Reservoir
8 — Power Steering Fluid Reservoir
9 — Power Distribution Center
10 — Engine Oil Dipstick
11 — Engine Oil Fill
12 — Air Cleaner Filter

MAINTENANCE PROCEDURES

The pages that follow contain the **required** maintenance services determined by the engineers who designed your vehicle.

Besides those maintenance items specified in the fixed maintenance schedule, there are other components which may require servicing or replacement in the future.

CAUTION!

- **Failure to properly maintain your vehicle or perform repairs and service when necessary could result in more costly repairs, damage to other components or negatively impact vehicle performance. Immediately have potential malfunctions examined by an authorized Chrysler Group LLC dealership or qualified repair center.**

(Continued)

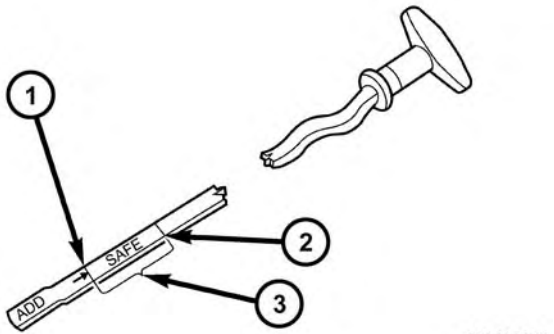
CAUTION! ***(Continued)***

- **Your vehicle has been built with improved fluids that protect the performance and durability of your vehicle and also allow extended maintenance intervals. Do not use chemical flushes in these components as the chemicals can damage your engine, transmission, power steering or air conditioning. Such damage is not covered by the New Vehicle Limited Warranty. If a flush is needed because of component malfunction, use only the specified fluid for the flushing procedure.**

Engine Oil

Checking Oil Level

To assure proper lubrication of your vehicle's engine, the engine oil must be maintained at the correct level. Check the oil level at regular intervals. The best time to check the oil level is before starting the engine after it has been parked overnight. When checking oil after operating the engine, first ensure the engine is at full operating temperature, then wait for 30 minutes after engine shutdown to check the oil.



1 — ADD Range
2 — Full Mark
3 — SAFE Range

Checking the oil while the vehicle is on level ground will improve the accuracy of the oil level readings. Add oil only when the level on the dipstick is below the "ADD"

mark. The total capacity from the low mark to the high mark is 2 qts (1.9L).

CAUTION!

Overfilling or underfilling the crankcase will cause oil aeration or loss of oil pressure. This could damage your engine.

Never operate the engine with oil level below the "ADD" mark or above the upper "SAFE" mark.

Change Engine Oil

Refer to the "Maintenance Schedule" for the proper maintenance intervals.

Engine Oil Selection

For best performance and maximum protection under all types of operating conditions, the manufacturer only recommends engine oils that are API CJ-4 certified and meet the requirements of Chrysler Group LLC. Use MOPAR® or an equivalent oil meeting Chrysler Material Standard MS-10902. Products meeting Cummins® CES 20081 may also be used. The identification of these engine oils are typically located on the back of the oil container.

American Petroleum Institute (API) Engine Oil Identification Symbol

072610757

This symbol means that the oil has been certified by the American Petroleum Institute (API). The manufacturer only recommends API Certified engine oils.

Oils with a high ash content may produce damaging deposits on cylinder head valves and/or aftertreatment system damage. A maximum sulfated ash content of 1.00 mass % is recommended for all oil used in the engine.

The same oil change interval is to be followed for synthetic oil as for petroleum based oil. Also, synthetic oil must meet the same performance specifications as petroleum oil.

CAUTION!

Do not use chemical flushes in your engine oil as the chemicals can damage your engine. Such damage is not covered by the New Vehicle Limited Warranty.

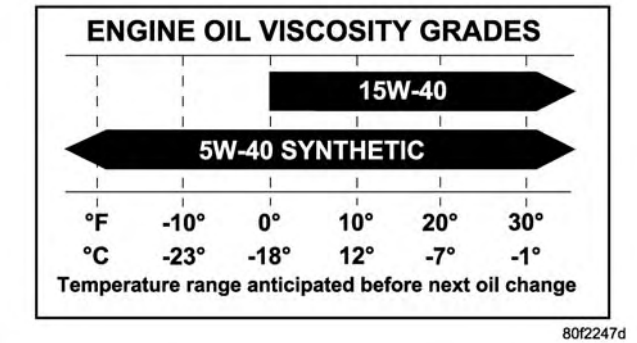
Engine Oil Viscosity (SAE Grade)

Use SAE 15W-40 MOPAR® or an equivalent engine oil meeting Chrysler Material Standard MS-10902. Products meeting Cummins® CES 20081 may also be used. The identification of these engine oils is typically located on the back of the oil container.

In ambient temperatures below 0°F (-18°C), SAE 5W-40 **synthetic** engine oil that meets Chrysler Materials Standard MS-10902 and the API CJ-4 engine oil category is required.

CAUTION!

Failure to use SAE 5W-40 synthetic engine oil in ambient temperatures below 0°F (-18°C) could result in severe engine damage.



Engine oil not designated by the Chrysler or Cummins® Material Standards and API CJ-4 should not be used, as engine and exhaust system durability may be compromised. The engine oil filler cap also shows the recommended engine oil viscosity for your engine. For information on engine oil filler cap location, refer to "Engine Compartment" in "Maintaining Your Vehicle" for further information.

Synthetic Engine Oils

You may use synthetic engine oils if the recommended oil quality requirements are met and the recommended maintenance intervals for oil and filter changes are followed.

Materials Added To Engine Oil

The manufacturer strongly recommends against the addition of any additives (other than leak detection dyes) to the engine oil. Engine oil is an engineered product and its performance may be impaired by supplemental additives.

Engine Oil Filter

Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information. The engine oil filter should be changed at every engine oil change.

Disposing Of Used Engine Oil And Oil Filters

Care should be taken in disposing of used engine oil and oil filters from your vehicle. Used oil and oil filters, indiscriminately discarded, can present a problem to the environment. Contact your authorized dealer, service station or governmental agency for advice on how and where used oil and oil filters can be safely discarded in your area.

Engine Air Cleaner Filter

CAUTION!

All air entering the engine intake must be filtered. The abrasive particles in unfiltered air will cause rapid wear to engine components.

The condition of the air cleaner filter is monitored by the Engine Control Module. The "SERVICE AIR FILTER" message will display in the Electronic Vehicle Information Center (EVIC) when service is required. Refer to "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for further information.

The "SERVICE AIR FILTER" message could be displayed periodically. This is because engine air flow requirements change based on driving conditions. As the filter becomes more restrictive and air flow requirements increase the "SERVICE AIR FILTER" message will be displayed. The message may not be displayed in subsequent drive cycles if the same conditions are not met. The air filter element should be replaced within 250 miles (402 km) from the first time this message is displayed to ensure proper engine operation during all driving conditions.

CAUTION!

Driving with a restricted air filter can cause engine damage. Driving in dusty environments for extended periods will lead to rapid air filter plugging. Action should be taken as soon as the "SERVICE AIR FILTER" message is displayed.

If the vehicle experiences a sudden loss of engine power while being driven in heavy snow or rain, or when plowing snow, and/or the "SERVICE AIR FILTER" message is displayed on the EVIC along with a chime that repeats every 60 seconds, visually inspect the air filter for snow/ice build up or extreme water saturation. If the air filter is not damaged, remove all snow/ice and reinstall air filter. If the air filter is damaged, replace filter element.

NOTE: The air filter housing contains a Mass Air Flow sensor. This sensor is critical to proper engine operation and component longevity. Any damage or modification to this sensor could result in major engine and/or exhaust aftertreatment damage. We recommend you use MOPAR® brand parts.

Even though your vehicle is equipped with an Air Filter Monitor, a visual inspection of the air cleaner filter element is recommended every 15,000 miles (24,000km) or 12 months – whichever occurs first. **Under no circumstances should the air cleaner filter element exceed 30,000 miles (48,000 km) or 24 months, whichever comes first.**

CAUTION!

Many aftermarket performance air filter elements do not adequately filter the air entering the engine. Use of such filters can severely damage your engine.

Draining Fuel/Water Separator Filter

There are two fuel filter assemblies. One is located on the driver's side of the engine. The best access to this water drain valve is from under the hood. The second one is on the under body, located in front of the rear axle above the drive shaft on pick-up models. The Chassis Cab models second filter location is on the frame behind the front axle. The best access to this water drain valve is from under the vehicle.

CAUTION!

- **Do not drain the fuel/water separator filters when the engine is running.**
- **Diesel fuel will damage blacktop paving surfaces. Drain the filters into an appropriate container.**

If water is detected in the water separator while the engine is running, or while the ignition switch is in the ON position, the "Water In Fuel Indicator Light" will illuminate and an audible chime will be heard five times. At this point you should stop the engine and drain the water from both of the filters.

CAUTION!

If the "Water In Fuel Indicator Light" remains on, DO NOT START the engine before you drain water from the fuel filters to avoid engine damage.

If the "Water In Fuel Indicator Light" comes on and a single chime is heard while you are driving, or with the ignition switch in the ON position, there may be a problem with your water separator wiring or sensor. See your authorized dealer for service.

Upon proper draining of the water from both fuel filters, the "Water In Fuel Indicator Light" will remain illuminated for approximately 10 seconds. If the water was

drained while the engine was running, the "Water In Fuel Indicator Light" may remain on for approximately three minutes.

NOTE: Care should be taken in disposing of used fluids from your vehicle. Used fluids, indiscriminately discarded, can present a problem to the environment. Contact an authorized dealer, service station, or government agency for advice on recycling programs and for where used fluids and filters can be properly disposed of in your area.

Drain the fuel/water separator filters when the "Water In Fuel Indicator Light" is ON. Within 10 minutes of vehicle shutdown, turn the engine mounted filter drain valve (located on the side of the filters) counterclockwise 1/4 turn, and turn the under body mounted filter drain valve (located on the bottom of the filter) counterclock wise 1 full turn. Then turn the ignition switch to the ON position, and allow any accumulated water to drain. Leave the drain valve open until all water and contaminants have been removed. When clean fuel is visible, close the drain valves by turning them fully clockwise, and turn the ignition switch to OFF.

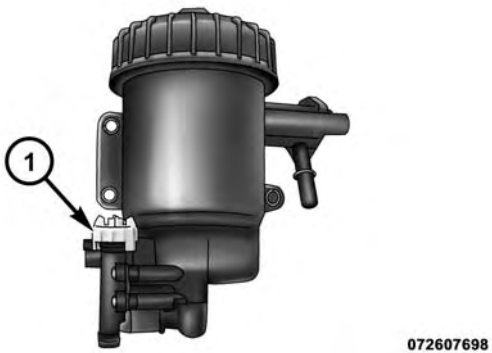
If more than a couple ounces/milliliters of fuel have been drained, follow the directions for "Priming If The Engine Has Run Out Of Fuel."

Engine Mounted Fuel Filter Replacement

NOTE: Using a fuel filter that does not meet the manufacturer's filtration and water separating requirements can severely impact fuel system life and reliability.

NOTE: The engine mounted filter housing is equipped with a No-Filter-No-Run (NFNR) feature. Engine will not run if:

1. No filter is installed.
2. Inferior/Non-approved filter is used. Use of OEM filter is required to ensure vehicle will run.



1 — Drain Valve

CAUTION!

- **Diesel fuel will damage blacktop paving surfaces. Drain the filter into an appropriate container.**
- **Do not prefill the fuel filter when installing a new fuel filter. There is a possibility debris could be introduced into the fuel filter during this action. It is best to install the filter dry and allow the in-tank lift pump to prime the fuel system.**

1. Ensure engine is turned off.
2. Place drain pan under the fuel filter drain hose.
3. Open the water drain valve 1/4 turn counterclockwise and completely drain fuel and water into the approved container.
4. Close the water drain valve.

5. Remove lid using a socket or strap wrench. Rotate counterclockwise for removal. Remove used o-ring and discard it.
6. Remove the used filter cartridge from the housing and dispose of according to your local regulations.
7. Wipe clean the sealing surfaces of the lid and housing.
8. Install new o-ring back into ring groove on the filter housing and lubricate with clean engine oil.
9. Remove new filter cartridge from plastic bag and install into housing.

NOTE: Do not remove cartridge from bag until you reach this step in order to keep cartridge clean.

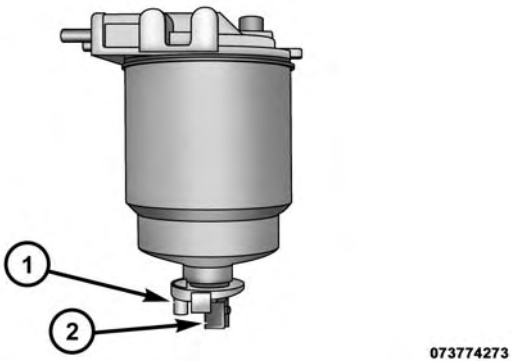
10. Push down on the cartridge to ensure it is properly seated. **Do not pre-fill the filter housing with fuel.**
11. Install lid onto housing and tighten to 22.5 ft lbs (30.5 N.m). Do not overtighten the lid.
12. Prime the engine using the procedure in "Priming If The Engine Has Run Out Of Fuel." Then start the engine and confirm there are no leaks.

Underbody Mounted Fuel Filter Replacement

NOTE: Using a fuel filter that does not meet the manufacturer's filtration and water separating requirements can severely impact fuel system life and reliability.

NOTE: The underbody mounted filter housing will cause the engine not to run if:

1. No filter is installed.



1 — Drain Valve 2 — WIF Sensor

CAUTION!

- **Diesel fuel will damage blacktop paving surfaces. Drain the filter into an appropriate container.**
- **Do not prefill the fuel filter when installing a new fuel filter. There is a possibility debris could be introduced into the fuel filter during this action. It is best to install the filter dry and allow the in-tank lift pump to prime the fuel system.**

1. Ensure engine is turned off.
2. Place drain pan under the fuel filter drain hose.
3. Open the water drain valve 1 full turn counterclockwise and completely drain fuel and water into the approved container.

4. Close the water drain valve.
5. Remove lid using a socket or strap wrench. Rotate counterclockwise for removal. Remove used o-ring and discard it.
6. Remove the used filter cartridge from the housing and dispose of according to your local regulations.
7. Wipe clean the sealing surfaces of the lid and housing.
8. Install new o-ring back into ring groove on the filter housing and lubricate with clean engine oil.

NOTE: WIF sensor is re-usable. Service kit comes with new o-ring for filter canister and WIF sensor.

Priming If The Engine Has Run Out Of Fuel

WARNING!

Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.

1. Add a substantial amount of fuel to the tank, approximately 2 to 5 gal (8L to 19L).
2. Turn ignition switch to the start position to engage starter for one second, return ignition switch to run position. This will activate in tank fuel pump for approximately 15 seconds. Repeat this process twice.
3. Start the engine using the “Normal Starting” procedure. Refer to “Starting Procedures” in “Starting and Operating” for further information.

CAUTION!

Do not engage the starter motor for more than 15 seconds at a time. Allow two minutes between the cranking intervals.

NOTE: The engine may run rough until the air is forced from all the fuel lines.

WARNING!

Do not use alcohol or gasoline as a fuel blending agent. They can be unstable under certain conditions and be hazardous or explosive when mixed with diesel fuel.

CAUTION!

Due to lack of lubricants in alcohol or gasoline, the use of these fuels can cause damage to the fuel system.

NOTE:

- A maximum blend of 20% biodiesel, meeting ASTM specification D-6751 may be used with your Cummins® diesel engine. Use of biodiesel mixture in excess of 20% can negatively impact the fuel filter's ability to separate water from the fuel, resulting in high pressure fuel system corrosion or damage.
- Ethanol blends are not recommended or approved for use with your Cummins® diesel engine.
- In addition, commercially available fuel additives are not necessary for the proper operation of your Cummins® diesel engine.

Intervention Regeneration Strategy – EVIC Message Process Flow

The Cummins® diesel engine meets all EPA Heavy Duty Diesel Engine Emissions Standards, resulting in one of the lowest emitting diesel engines ever produced.

To achieve these emissions standards, your vehicle is equipped with a state-of-the-art engine and exhaust system. The engine and exhaust after-treatment system work together to achieve the EPA Heavy Duty Diesel Engine Emissions Standards. These systems are seamlessly integrated into your vehicle and managed by the Cummins® Powertrain Control Module (PCM). The PCM manages engine combustion to allow the exhaust system's catalyst to trap and burn Particulate Matter (PM) pollutants, with no input or interaction on your part.

Additionally, your vehicle has the ability to alert you to additional maintenance required on your truck or engine. Refer to the following messages that may be displayed on your Electronic Vehicle Information Center (EVIC):

WARNING!

A hot exhaust system can start a fire if you park over materials that can burn. Such materials might be grass or leaves coming into contact with your exhaust system. Do not park or operate your vehicle in areas where your exhaust system can contact anything that can burn.

Perform Service

Your vehicle will require emissions maintenance at a set interval. To help remind you when this maintenance is due, the Electronic Vehicle Information Center (EVIC) will display "Perform Service". When the "Perform Service" message is displayed on the EVIC it is necessary to have the emissions maintenance performed. Emissions

maintenance may include replacing the Closed Crankcase Ventilation (CCV) filter element. The procedure for clearing and resetting the ″Perform Service″ indicator message is located in the appropriate Service Information.

Exhaust System – Regeneration Required Now

″Exhaust Filter XX% Full Safely Drive at Highway Speeds to Remedy″ will be displayed on the Electronic Vehicle Information Center (EVIC) if the exhaust particulate filter reaches 80% of its maximum storage capacity. Under conditions of exclusive short duration and low speed driving cycles, your Cummins® diesel engine and exhaust after-treatment system may never reach the conditions required to remove the trapped PM. If this occurs, the "Exhaust Filter XX% Full Safely Drive at Highway Speeds to Remedy" message will be displayed in the EVIC. If this message is displayed, you will hear one chime to assist in alerting you of this condition.

By simply driving your vehicle at highway speeds for as little as 45 minutes, you can remedy the condition in the particulate filter system and allow your Cummins® diesel engine and exhaust after-treatment system to remove the trapped PM and restore the system to normal operating condition.

Exhaust System – Regeneration In Process Exhaust Filter XX% Full

Indicates that the Diesel Particulate Filter (DPF) is self-cleaning. Maintain your current driving condition until regeneration is completed.

Exhaust System – Regeneration Completed

Indicates that the Diesel Particulate Filter (DPF) self-cleaning is completed. If this message is displayed, you will hear one chime to assist in alerting you of this condition.

Exhaust Service Required – See Dealer Now

Regeneration has been disabled due to a system malfunction. At this point the engine Powertrain Control Module (PCM) will register a fault code, the instrument panel will display a MIL light.

CAUTION!

See your authorized dealer, as damage to the exhaust system could occur soon with continued operation.

Exhaust Filter Full – Power Reduced See Dealer

The PCM derates the engine in order to limit the likelihood of permanent damage to the after-treatment system. If this condition is not corrected and a dealer service is not performed, extensive exhaust after-treatment damage can occur. In order to correct this condition it will be necessary to have your vehicle serviced by your local authorized dealer.

CAUTION!

See your authorized dealer, as damage to the exhaust system could occur soon with continued operation.

Diesel Exhaust Fluid

Diesel Exhaust Fluid (DEF) sometimes known simply by the name of its active component, UREA—is a key component of selective catalytic reduction (SCR) systems, which help diesel vehicles meet stringent emission regulations. DEF is a liquid reducing agent that reacts with engine exhaust in the presence of a catalyst to convert smog-forming nitrogen oxides (NOx) into harmless nitrogen and water vapor.

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for further information.

You can receive assistance in locating DEF in the United States by calling 866-RAM-INFO (866-726-4636). In Canada call 1–800–465–2001 (English) or 1–800–387–9983 (French)

Maintenance-Free Batteries

The top of the maintenance-free batteries are permanently sealed. You will never have to add water, nor is periodic maintenance required.

NOTE: Replacement batteries should both be of equal capacity to prevent damage to the vehicle's charging system.

CAUTION!

It is essential when replacing the cables on the battery that the positive cable is attached to the positive post and the negative cable is attached to the

(Continued)

CAUTION! ***(Continued)***

negative post. Battery posts are marked (+) positive and negative (-) and are identified on the battery case. Also, if a "fast charger" is used while the battery is in vehicle, disconnect both vehicle battery cables before connecting the charger to the battery. Do not use a "fast charger" to provide starting voltage.

WARNING!

Battery posts, terminals, and related accessories contain lead and lead compounds. Always wash hands after handling the battery.

6

Battery Blanket Usage

A battery loses 60% of its cranking power as the battery temperature decreases to 0°F (-18°). For the same decrease in temperature, the engine requires twice as much power to crank at the same RPM. The use of 120 Volt AC

powered battery blankets will greatly increase starting capability at low temperatures. Suitable battery blankets are available from your authorized MOPAR® dealer.

Cooling System

WARNING!

You or others can be badly burned by hot engine coolant (antifreeze) or steam from your radiator. If you see or hear steam coming from under the hood, do not open the hood until the radiator has had time to cool. Never try to open a cooling system pressure cap when the radiator is hot.

Engine Coolant Checks

Check the engine coolant (antifreeze) protection every 12 months (before the onset of freezing weather, where applicable). If the engine coolant (antifreeze) is dirty or rusty in appearance, the system should be drained, flushed and refilled with fresh coolant. Check the front of the A/C condenser (if equipped) or radiator for any accumulation of bugs, leaves, etc. If dirty, clean by gently spraying water from a garden hose vertically down the face of the A/C condenser (if equipped) or the back of the radiator core.

Check the engine cooling system hoses for brittle rubber, cracking, tears, cuts and tightness of the connection at the coolant recovery bottle and radiator. Inspect the entire system for leaks.

With the engine at normal operating temperature (but not running), check the cooling system pressure cap for proper vacuum sealing by draining a small amount of engine coolant (antifreeze) from the radiator drain cock. The radiator drain cock is located in the lower radiator tank. If the cap is sealing properly, the engine coolant

(antifreeze) will begin to drain from the coolant expansion bottle. DO NOT REMOVE THE COOLANT PRESSURE CAP WHEN THE COOLING SYSTEM IS HOT.

Cooling System – Drain, Flush, And Refill

If the engine coolant (antifreeze) is dirty or contains a considerable amount of sediment, clean and flush with a reliable cooling system cleaner. Follow with a thorough rinsing to remove all deposits and chemicals. Properly dispose of old engine coolant (antifreeze).

Refer to the "Maintenance Schedule" for the proper maintenance intervals.

Selection Of Coolant

Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information.

CAUTION!

- **Mixing of engine coolant (antifreeze) other than specified Organic Additive Technology (OAT) engine coolant (antifreeze), may result in engine damage and may decrease corrosion protection. Organic Additive Technology (OAT) engine coolant is different and should not be mixed with Hybrid Organic Additive Technology (HOAT) engine coolant (antifreeze) or any "globally compatible" coolant (antifreeze). If a non-OAT engine coolant (antifreeze) is introduced into the cooling system in an emergency, the cooling system will need to be drained, flushed, and refilled with fresh OAT coolant (conforming to MS-12106), by an authorized dealer as soon as possible.**

(Continued)

CAUTION! ***(Continued)***

- **Do not use water alone or alcohol-based engine coolant (antifreeze) products. Do not use additional rust inhibitors or antirust products, as they may not be compatible with the radiator engine coolant and may plug the radiator.**
- **This vehicle has not been designed for use with propylene glycol-based engine coolant (antifreeze). Use of propylene glycol-based engine coolant (antifreeze) is not recommended.**

Adding Coolant

Your vehicle has been built with an improved engine coolant (OAT coolant conforming to MS-12106) that allows extended maintenance intervals. This engine coolant (antifreeze) can be used up to ten years or 150,000 miles (240,000 km) before replacement. To prevent reducing this extended maintenance period, it is important that you use the same engine coolant (OAT coolant conforming to MS-12106) throughout the life of your vehicle.

Please review these recommendations for using Organic Additive Technology (OAT) engine coolant (antifreeze) that meets the requirements of Chrysler Material Standard MS-12106. When adding engine coolant (antifreeze):

- We recommend using MOPAR® Antifreeze/Coolant 10 Year/150,000 Mile Formula OAT (Organic Additive Technology) that meets the requirements of Chrysler Material Standard MS-12106.
- Mix a minimum solution of 50% OAT engine coolant that meets the requirements of Chrysler Material Standard MS-12106 and distilled water. Use higher concentrations (not to exceed 70%) if temperatures below –34° F (–37° C) are anticipated.
- Use only high purity water such as distilled or deionized water when mixing the water/engine coolant

(antifreeze) solution. The use of lower quality water will reduce the amount of corrosion protection in the engine cooling system.

Please note that it is the owner's responsibility to maintain the proper level of protection against freezing according to the temperatures occurring in the area where the vehicle is operated.

NOTE: Mixing engine coolant (antifreeze) types is not recommended and can result in cooling system damage. If HOAT and OAT coolant are mixed in an emergency, have a authorized dealer drain, flush, and refill with OAT coolant (conforming to MS-12106) as soon as possible.

Cooling System Pressure Cap

The cap must be fully tightened to prevent loss of engine coolant (antifreeze), and to ensure that the engine coolant (antifreeze) will return to the radiator from the coolant expansion bottle.

The cap should be inspected and cleaned if there is any accumulation of foreign material on the sealing surfaces.

WARNING!

- **The warning words "DO NOT OPEN HOT" on the cooling system pressure cap are a safety precaution. Never add engine coolant (antifreeze) when the engine is overheated. Do not loosen or remove the cap to cool an overheated engine. Heat causes pressure to build up in the cooling system. To prevent scalding or injury, do not remove the pressure cap while the system is hot or under pressure.**
- **Do not use a pressure cap other than the one specified for your vehicle. Personal injury or engine damage may result.**

Disposal Of Used Engine Coolant

Used ethylene glycol-based engine coolant (antifreeze) is a regulated substance requiring proper disposal. Check with your local authorities to determine the disposal rules for your community. To prevent ingestion by animals or children, do not store ethylene glycol-based engine coolant (antifreeze) in open containers or allow it to remain in puddles on the ground. If ingested by a child or pet, seek emergency assistance immediately. Clean up any ground spills immediately.

Points To Remember

NOTE: When the vehicle is stopped after a few miles/kilometers of operation, you may observe vapor coming from the front of the engine compartment. This is normally a result of moisture from rain, snow, or high humidity accumulating on the radiator and being vaporized when the thermostat opens, allowing hot engine coolant (antifreeze) to enter the radiator.

If an examination of your engine compartment shows no evidence of radiator or hose leaks, the vehicle may be safely driven. The vapor will soon dissipate.

- Do not overfill the coolant expansion bottle.
- Check the coolant freeze point in the radiator and in the coolant expansion bottle. If engine coolant (antifreeze) needs to be added, the contents of the coolant expansion bottle must also be protected against freezing.
- If frequent engine coolant (antifreeze) additions are required, the cooling system should be pressure tested for leaks.

- Maintain engine coolant (antifreeze) concentration at a minimum of 50% OAT coolant (conforming to MS-12106) and distilled water for proper corrosion protection of your engine which contains aluminum components.
- Make sure that the coolant expansion bottle overflow hoses are not kinked or obstructed.
- Keep the front of the radiator clean. If your vehicle is equipped with air conditioning, keep the front of the condenser clean.
- Do not change the thermostat for Summer or Winter operation. If replacement is ever necessary, install ONLY the correct type thermostat. Other designs may result in unsatisfactory engine coolant (antifreeze) performance, poor gas mileage, and increased emissions.

Charge Air Cooler – Inter-Cooler

The charge air cooler is positioned below the radiator and the air conditioner condenser. Air enters the engine through the air cleaner and passes through the turbocharger, where it is pressurized. This pressurized air rapidly reaches high temperature. The air is then directed through a hose to the charge air cooler and through another hose to the intake manifold of the engine. The air entering the engine has been cooled by about 50° to 100°F (10° to 38°C). This cooling process enables more efficient burning of fuel resulting in fewer emissions.

To guarantee optimum performance of the system, keep the surfaces of the charge air cooler, condenser and radiator clean and free of debris. Periodically check the hoses leading to and from the charge air cooler for cracks or loose clamps resulting in loss of pressure and reduced engine performance.

Brake System

Brake Master Cylinder – Brake Fluid Level Check

The fluid level of the master cylinder should be checked when performing under the hood service, or immediately if the "Brake System Warning Light" indicates system failure.

The brake master cylinder has a translucent plastic reservoir. On the outboard side of the reservoir, there is a "MAX" mark and an "MIN" mark. The fluid level must be kept within these two marks. Do not add fluid above the full mark because leakage may occur at the cap.

With disc brakes, the fluid level can be expected to fall as the brake linings wear. However, an unexpected drop in fluid level may be caused by a leak and a system check should be conducted.

Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information.

WARNING!

- **Use only manufacturer's recommended brake fluid. Refer to "Fluids, Lubricants, and Genuine Parts" in "Maintaining Your Vehicle" for further information. Using the wrong type of brake fluid can severely damage your brake system and/or impair its performance. The proper type of brake fluid for your vehicle is also identified on the original factory installed hydraulic master cylinder reservoir.**

(Continued)

WARNING! ***(Continued)***

- **To avoid contamination from foreign matter or moisture, use only new brake fluid or fluid that has been in a tightly closed container. Keep the master cylinder reservoir cap secured at all times. Brake fluid in a open container absorbs moisture from the air resulting in a lower boiling point. This may cause it to boil unexpectedly during hard or prolonged braking, resulting in sudden brake failure. This could result in a accident.**
- **Overfilling the brake fluid reservoir can result in spilling brake fluid on hot engine parts, causing the brake fluid to catch fire. Brake fluid can also damage painted and vinyl surfaces, care should be taken to avoid its contact with these surfaces.**

(Continued)

WARNING! ***(Continued)***

- **Do not allow petroleum based fluid to contaminate the brake fluid. Brake seal components could be damaged, causing partial or complete brake failure. This could result in an accident.**

Clutch Hydraulic System

The clutch hydraulic system is a sealed maintenance-free system. In the event of leakage or other malfunction, the system must be replaced.

Transfer Case – If Equipped

Drain And Refill

Refer to the "Maintenance Schedule" for the proper maintenance intervals.

Selection of Lubricant

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for fluid specifications.

Fluid Level Check

This fluid level can be checked by removing the filler plug. The fluid level should be to the bottom edge of the filler plug hole with the vehicle in a level position.

Manual Transmission – If Equipped

Selection of Lubricant

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for fluid specifications.

Fluid Level Check

The fluid level can be checked by removing the filler plug. If the level of the lubricant is more than 1/2 in (12 mm) below the bottom of the filler hole while the vehicle is on level ground, enough lubricant should be added to bring the level to 1/4 in (6 mm) below the bottom of the filler hole.

Automatic Transmission – If Equipped

Selection of Lubricant

It is important to use the proper transmission fluid to ensure optimum transmission performance and life. Use only the manufacturer’s specified transmission fluid. Refer to “Fluids, Lubricants, and Genuine Parts” in this section for fluid specifications. It is important to maintain the transmission fluid at the correct level using the recommended fluid.

No chemical flushes should be used in any transmission; only the approved lubricant should be used.

CAUTION!

Using a transmission fluid other than the manufacturer's recommended fluid may cause deterioration in transmission shift quality, and will require more frequent fluid and filter changes. Refer to "Fluids, Lubricants, and Genuine Parts" in this section for fluid specifications.

Special Additives

The manufacturer strongly recommends against using any special additives in the transmission. Automatic Transmission Fluid (ATF) is an engineered product and its performance may be impaired by supplemental additives. Therefore, do not add any fluid additives to the transmission. The only exception to this policy is the use of special dyes for diagnosing fluid leaks. Avoid using transmission sealers as they may adversely affect seals.

CAUTION!

Do not use chemical flushes in your transmission as the chemicals can damage your transmission components. Such damage is not covered by the New Vehicle Limited Warranty.

Fluid Level Check

It is best to check the fluid level when the transmission is at normal operating temperature (170-180°F / 77-82°C for 68RFE transmission, or 158-176°F / 70-80°C for AS69RC transmission). This normally occurs after at least 15 miles (25 km) of driving. At normal operating temperature the fluid cannot be held comfortably between the fingertips. You can read the transmission sump temperature in the EVIC display (see Electronic Vehicle Information Center [EVIC] for further information).

Use the following procedure to check the transmission fluid level properly:

1. Monitor the transmission temperature using the EVIC display, and operate the vehicle as required to reach the normal operating temperature.
2. Park the vehicle on level ground.
3. Run the engine at normal idle speed for at least 60 seconds, and leave the engine running for the rest of this procedure.
4. Fully apply the parking brake and press the brake pedal.
5. Place the shift lever momentarily into each gear position (allowing time for the transmission to fully engage in each position), ending with the transmission in PARK.
6. Remove the dipstick, wipe it clean and reinsert it until seated.
7. Remove the dipstick again and note the fluid level on both sides. The fluid level reading is only valid if there is a solid coating of oil on both sides of the dipstick. Note that the holes in the dipstick will be full of fluid if the actual level is at or above the hole. The fluid level should be between the "HOT" (upper) reference holes on the dipstick at normal operating temperature. If the fluid level is low, add fluid through the dipstick tube to bring it to the proper level. **Do not overfill.** Use ONLY the recommended fluid (see "Fluids, Lubricants, and Genuine Parts" for fluid specifications). After adding any quantity of oil through the dipstick tube, wait a minimum of two minutes for the oil to fully drain into the transmission before rechecking the fluid level.

NOTE: If it is necessary to check the transmission **below** the operating temperature, the fluid level should be between the two "COLD" (lower) holes on the dipstick with the fluid at 60-70°F / 16-21°C for 68RFE transmission, or 68-86°F / 20-30°C for AS69RC transmission. Only use the COLD region of the dipstick as a rough reference when setting the fluid level after a transmission service or fluid change. Re-check the fluid level, and adjust as required, once the transmission reaches normal operating temperature.

CAUTION!

If the fluid temperature is below 50°F (10°C) it may not register on the dipstick. Do not add fluid until the temperature is elevated enough to produce an accurate reading. Run the engine at idle, in PARK, to warm the fluid.

8. Check for leaks. Release the parking brake.

NOTE: To prevent dirt and water from entering the transmission after checking or replenishing fluid, make sure that the dipstick cap is properly reseated. It is normal for the dipstick cap to spring back slightly from its fully seated position, as long as its seal remains engaged in the dipstick tube.

Fluid And Filter Change

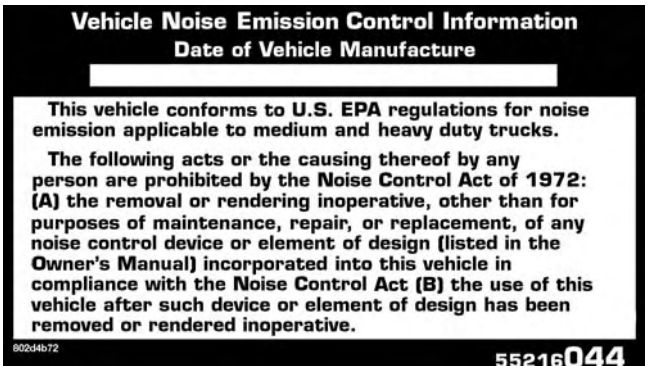
Refer to the "Maintenance Schedule" for the proper maintenance intervals.

In addition, change the fluid and filter(s) if the fluid becomes contaminated (with water, etc.), or if the transmission is disassembled for any reason.

Noise Control System Required Maintenance & Warranty

All vehicles built over 10,000 lbs. (4 535 kg) Gross Vehicle Weight Rating and manufactured for sale and use in the United States are required to comply with the Federal

Government's Exterior Noise Regulations. These vehicles can be identified by the Noise Emission Control Label located in the operator's compartment.


Vehicle Noise Emission Control Information
Date of Vehicle Manufacture
This vehicle conforms to U.S. EPA regulations for noise emission applicable to medium and heavy duty trucks.
The following acts or the causing thereof by any person are prohibited by the Noise Control Act of 1972: (A) the removal or rendering inoperative, other than for purposes of maintenance, repair, or replacement, of any noise control device or element of design (listed in the Owner's Manual) incorporated into this vehicle in compliance with the Noise Control Act (B) the use of this vehicle after such device or element of design has been removed or rendered inoperative.
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Required Maintenance For Noise Control Systems

The following maintenance services must be performed every six months or 7,500 miles (12 000 km) whichever comes first, to assure proper operation of the noise control systems. In addition, inspection and service should be performed anytime a malfunction is observed or suspected. Proper maintenance of the entire vehicle will help the effectiveness of the noise control systems.

Exhaust System

Inspect the entire exhaust system for leaks and damaged parts. Devices such as hangers, clamps, and U-bolts should be tight and in good condition. Damaged components, burned or blown out mufflers, burned or rusted out exhaust pipes should be replaced according to the procedures and specifications outlined in the appropriate service manual.

Air Cleaner Assembly

Inspect air cleaner housing for proper assembly and fit. Make certain that the air cleaner is properly positioned and that the cover is tight. Check all hoses leading to the air cleaner for tightness. The air filter element must also be clean and serviced according to the instructions outlined in the Maintenance Schedule section of this manual.

Tampering With Noise Control System Prohibited

Federal law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below.

AIR CLEANER

- Removal of the air cleaner.
- Removal of the air cleaner filter element from the air cleaner housing.
- Removal of the air ducting.

EXHAUST SYSTEM

- Removal or rendering inoperative exhaust system components including the muffler or tailpipe.

ENGINE COOLING SYSTEM

- Removal or rendering inoperative the fan clutch.
- Removal of the fan shroud.

Noise Emission Warranty

The manufacturer warrants that this vehicle as manufactured by the manufacturer, was designed, built and equipped to conform at the time it left the manufacturer's control with all applicable U.S. EPA Noise Control Regulations.

This warranty covers this vehicle as designed, built and equipped by the manufacturer, and is not limited to any particular part, component or system of the vehicle manufactured by the manufacturer. Defects in design, assembly or in any part, component or system of the vehicle as manufactured by the manufacturer, which, at the time it left the manufacturer's control, caused noise emissions to exceed Federal standards, are covered by this warranty for the life of the vehicle.

Maintenance Log and Service Chart (Diesel Engines)

Noise Systems Maintenance Chart and Service Log — Insert Month, Day, Year under column mileage closest to the mileage at which service was performed.

MILES KILOMETERS	7,500 12 000	15,000 24 000	22,500 36 000	30,000 48 000	37,500 60 000	45,000 72 000	52,500 84 000	60,000 96 000
Exhaust system-inspect								
Air cleaner assembly-inspect								
ODOMETER READING								
PERFORMED BY								
PERFORMED AT								

Noise Systems Maintenance Chart and Service Log — Insert Month, Day, Year under column mileage closest to the mileage at which service was performed.

MILES KILOMETERS	67,500 108 000	75,000 120 000	82,500 132 000	90,000 144 000	97,500 156 000	105,000 168 000	112,500 180 000	120,000 192 000
Exhaust system-inspect								
Air cleaner assembly-inspect								
ODOMETER READING								
PERFORMED BY								
PERFORMED AT								

FLUID CAPACITIES

	U.S.	Metric
Fuel (Approximate)		
2500/3500 Shortbed Models	31 Gallons	129 Liters
2500/3500 Longbed Models	32 Gallons	132 Liters
Standard Rear Tank – Chassis Cab Only	52 Gallons	197 Liters
Optional Midship Tank – Chassis Cab Only	22 Gallons	83 Liters
Diesel Exhaust Fluid Tank (Approximate) – 2500/3500 Models	5.5 Gallons	21 Liters
Diesel Exhaust Fluid Tank (Approximate) – Chassis Cab	9 Gallons	34 Liters
Engine Oil With Filter		
6.7L Turbo Diesel Engine	12 Quarts	11.4 Liters
Cooling System		
6.7L Turbo Diesel Engine (MOPAR® Engine Coolant/ Antifreeze 10 Year/150,000 Mile Formula)	5.7 Gallons	21.4 Liters

FLUIDS, LUBRICANTS AND GENUINE PARTS

Engine

Component	Fluid, Lubricant, or Genuine Part
Engine Coolant	We recommend you use MOPAR® Antifreeze/Coolant 10 Year/150,000 Mile Formula OAT (Organic Additive Technology).
Engine Oil	In ambient temperatures below 0°F (-18°C), We recommend you use 5W-40 **synthetic** engine oil that meets Chrysler Materials Standard MS-10902 and the API CJ-4 engine oil category is required. In ambient temperatures above 0°F (-18°C), We recommend you use 15W-40 engine oil that meets Chrysler Materials Standard MS-10902 and the API CJ-4 engine oil category is required.
Engine Oil Filter	We recommend you use MOPAR® Engine Oil Filters.
Fuel Filters	We recommend you use MOPAR® Fuel Filter. Must meet 3 micron rating. **Using a fuel filter that does not meet the manufacturers filtration and water separating requirements can severely impact fuel system life and reliability.**
Crankcase Ventilation Filter	We recommend you use MOPAR® CCV Filter.

Component	Fluid, Lubricant, or Genuine Part
Fuel Selection	Use good quality diesel fuel from a reputable supplier in your vehicle. Federal law requires that you must fuel this vehicle with Ultra Low Sulfur Highway Diesel fuel (15 ppm Sulfur maximum) and prohibits the use of Low Sulfur Highway Diesel fuel (500 ppm Sulfur maximum) to avoid damage to the emissions control system. For most year-round service, No. 2 diesel fuel meeting ASTM specification D-975 Grade S15 will provide good performance. If the vehicle is exposed to extreme cold (below 20°F or -7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters. **This vehicle is fully compatible with biodiesel blends up to 5% biodiesel meeting ASTM specification D-975.** Pickup models, and Chassis Cab models configured with optional B20 capability, are additionally compatible with 20% biodiesel meeting ASTM specification D-7467.
Diesel Exhaust Fluid	MOPAR® Diesel Exhaust Fluid (API Certified) (DEF) or equivalent that has been API Certified to the ISO 22241 standard. Use of fluids not API Certified to ISO 22241 may result in system damage. You can receive assistance in locating DEF in the United States by calling 866-RAM-INFO (866-726-4636). In Canada call 1–800–465–2001 (English) or 1–800–387–9983 (French)

Chassis

Component	Fluid, Lubricant, or Genuine Part
Automatic Transmission – If Equipped (Six-Speed 68RFE) – Pickup models without PTO	We recommend you use MOPAR® ATF+4® Automatic Transmission Fluid or equivalent licensed ATF+4® product. Failure to use ATF+4® fluid may affect the function or performance of your transmission.
Automatic Transmission – If Equipped (Six-Speed AS69RC) – Pickup models with PTO, and all Chassis Cab models	We recommend you use MOPAR® ASRC Automatic Transmission Fluid or equivalent. Failure to use the proper fluid may affect the function or performance of your transmission.
Transfer Case	We recommend you use MOPAR® BW44–44 Transfer Case Fluid.
Front and Rear Axle Fluid (2500/3500)	We recommend you use Synthetic, GL-5 SAE, 75W-90. Limited-Slip 10.5/11.5 inch Rear Axles Limited slip additive is not required.

Component	Fluid, Lubricant, or Genuine Part
Front and Rear Axle Fluid (4500/5500)	We recommend you use GL-5 SAE 75W-90 Synthetic (MS-9763).
Clutch Linkage	We recommend you use MOPAR® Multi-Purpose Grease, NLGI Grade 2 E.P. or equivalent.
Manual Transmission (G-56) – If Equipped	We recommend you use MOPAR® ATF+4® Automatic Transmission Fluid or equivalent licensed ATF+4® product.

MAINTENANCE SCHEDULE

CONTENTS

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□ Required Maintenance Intervals 292

MAINTENANCE SCHEDULE – DIESEL ENGINE

CAUTION!

Failure to perform the required maintenance items may result in damage to the vehicle.

At Each Stop For Fuel

- Check the engine oil level at least 30 minutes after a fully warmed engine is shut off. Checking the oil level while the vehicle is on level ground will improve the accuracy of the oil level reading. Add oil only when the level is at or below the ADD or MIN mark.

Once A Month

- Inspect the batteries, and clean and tighten the terminals as required.
- Check the fluid levels of the coolant reservoir, brake master cylinder, and automatic transmission (if equipped), and add as needed.

At Each Oil Change

- Change the engine oil filter.
- Inspect the exhaust system.
- Check the coolant level, hoses, and clamps.
- Lubricate outer tie rod ends.

Inspection and service should also be performed anytime a malfunction is observed or suspected. Retain all receipts.

Oil Change Indicator System – Cummins® Diesel

Your vehicle is equipped with an engine oil change indicator system. This system will alert you when it is time to change your engine oil by displaying the words "Oil Change Due" on your Electronic Vehicle Information Center (EVIC). The engine oil change indicator system is duty cycle based, which means the engine oil

change interval may fluctuate depending on your personal driving style. Driving styles such as frequent stop and go type driving or extended idle time can increase the frequency of the engine oil change. This is the result of more frequent regeneration of the exhaust after treatment system, which can decrease the life of the engine oil. Failure to change the engine oil per the maintenance schedule can result in internal engine damage.

For information on resetting the Oil Change Indicator message, refer to "Oil Change Due" under "Electronic Vehicle Information Center (EVIC)/EVIC Warning Lights" in "Understanding Your Instrument Panel" for further information.

Replace the engine oil and oil filter every 15,000 miles (24 000 km) or six months, or sooner if prompted by the oil change indicator system. Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months, whichever comes first.

NOTE:

- **Under no circumstances should oil change intervals exceed 15,000 miles (24,000 km) or six months or 500 Hours, whichever comes first.**
- Replace the engine oil and oil filter every 12,500 miles (20 000 km) when running B20 fuel (Chassis Cab Only).

If Chassis Cab models are operated with greater than 5% levels of Biodiesel, the oil change interval must not exceed 12,500 miles (20 000 km) under any circumstances. See the Fuel Requirements section for more information regarding operation of Chassis Cab models configured for use with Biodiesel blend(B6-B20) fuel meeting ASTM specification D-7467.

Perform Service Indicator – Cummins® Diesel

Your vehicle will require emissions maintenance at a set interval. To help remind you when this maintenance is due, the Electronic Vehicle Information Center (EVIC) will display "Perform Service". When the "Perform Service" message is displayed on the EVIC it is necessary to have the emissions maintenance performed. Emissions maintenance may include replacing the Closed Crankcase Ventilation (CCV) filter element. The procedure for clearing and resetting the "Perform Service" indicator message is located in the appropriate Service Information.

Required Maintenance Intervals

Refer to the Maintenance Schedules on the following pages for the required maintenance intervals.

7,500 Miles (12,000 km) or 6 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

15,000 Miles (24,000 km) or 12 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

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Odometer Reading Date

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Repair Order # Dealer Code

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Signature, Authorized Service Center

22,500 Miles (36,000 km) or 18 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Inspect drive belt, replace if necessary.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect brake linings.
- ❑ Inspect and adjust parking brake if necessary.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

30,000 Miles (48,000 km) or 24 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the wheel bearings.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect the front (4x4) and rear axle fluid, change if using your vehicle for police, taxi, fleet, off-road or frequent trailer towing.
- ❑ Check the transfer case fluid (4x4).
- ❑ Change automatic transmission fluid (AS69RC transmission only).

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

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Odometer Reading Date

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Repair Order # Dealer Code

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Signature, Authorized Service Center

37,500 Miles (60,000 km) or 30 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

45,000 Miles (72,000 km) or 36 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Inspect drive belt, replace as necessary.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect brake linings.
- ❑ Inspect and adjust parking brake if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
  ** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

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Odometer Reading Date

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Repair Order # Dealer Code

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Signature, Authorized Service Center

52,500 Miles (84,000 km) or 42 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

60,000 Miles (96,000 km) or 48 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the wheel bearings.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
- ❑ Change automatic transmission fluid and sump filter (AS69RC transmission only).
- ❑ Change automatic transmission fluid and filter(s) if using your vehicle for any of the following: police, fleet, or frequent trailer towing (68RFE transmission only).
- ❑ Change the manual transmission fluid if using your vehicle for any of the following: police, fleet, or frequent trailer towing.
- ❑ Change the transfer case fluid (4x4).

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

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Odometer Reading Date

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Repair Order # Dealer Code

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Signature, Authorized Service Center

67,500 Miles (108,000 km) or 54 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Inspect drive belt, replace as necessary.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect brake linings.
- ❑ Inspect and adjust parking brake if necessary.
- ❑ **Replace Crankcase Ventilation Filter (CCV).**

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

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Odometer Reading Date

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Repair Order # Dealer Code

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Signature, Authorized Service Center

75,000 Miles (120,000 km) or 60 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
  ** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

82,500 Miles (132,000 km) or 66 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

90,000 Miles (144,000 km) or 72 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Inspect drive belt, replace as required.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the wheel bearings.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect brake linings.
- ❑ Inspect and adjust parking brake if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
- ❑ Check the transfer case fluid (4x4).
- ❑ Change automatic transmission fluid (AS69RC transmission only).

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

97,500 Miles (157,000 km) or 78 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Flush and replace power steering fluid.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

105,000 Miles (168,000 km) or 84 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
  ** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

112,500 Miles (180,000 km) or 90 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Inspect drive belt, replace as required.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect brake linings.
- ❑ Inspect and adjust parking brake if necessary.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

120,000 Miles (192,000 km) or 96 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the wheel bearings.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
- ❑ Change the automatic transmission fluid and filter(s).
- ❑ Change the manual transmission fluid if using your vehicle for any of the following: police, fleet, or frequent trailer towing.
- ❑ Change the transfer case fluid (4x4).

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

_____

Odometer Reading Date

_____

Repair Order # Dealer Code

_____

Signature, Authorized Service Center

127,500 Miles (204,000 km) or 102 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

135,000 Miles (216,000 km) or 108 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Inspect drive belt, replace as required.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Inspect brake linings.
- ❑ Inspect and adjust parking brake if necessary.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
- ❑ **Replace Crankcase Ventilation Filter (CCV).**

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

_____
Odometer Reading Date

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Repair Order # Dealer Code

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Signature, Authorized Service Center

142,500 Miles (228,000 km) or 114 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

Odometer Reading Date

Repair Order # Dealer Code

Signature, Authorized Service Center

150,000 Miles (240,000 km) or 120 Months Maintenance Service Schedule

- ❑ Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.
- ❑ Rotate tires.
- ❑ Replace engine fuel filter element.
- ❑ Replace chassis mounted fuel filter element.
- ❑ Adjust valve lash clearance.
- ❑ Lubricate front drive shaft fitting (4x4).
- ❑ Lubricate outer tie rod ends.
- ❑ Inspect the wheel bearings.
- ❑ Inspect the front suspension, tie rod ends and boot seals for cracks or leaks and all parts for damage, wear, improper looseness or end play; replace if necessary.
- ❑ Flush and replace engine coolant.
- ❑ Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid.
- ❑ Check the transfer case fluid (4x4).
- ❑ Change automatic transmission fluid (AS69RC transmission only).

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

_____
Odometer Reading Date

_____
Repair Order # Dealer Code

_____
Signature, Authorized Service Center

Inspection and service should also be performed anytime a malfunction is observed or suspected. Retain all receipts.

* This maintenance is not required if belt was previously replaced.

** Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

CAUTION!

*****The manufacturer highly recommends that all cooling system service, maintenance, and repairs be performed by your local authorized dealer.**

WARNING!

- **You can be badly injured working on or around a motor vehicle. Do only service work for which you have the knowledge and the right equipment. If you have any doubt about your ability to perform a service job, take your vehicle to a competent mechanic.**
- **Failure to properly inspect and maintain your vehicle could result in a component malfunction and effect vehicle handling and performance. This could cause an accident.**

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INSTALLATION OF RADIO TRANSMITTING EQUIPMENT

Special design considerations are incorporated into this vehicle's electronic system to provide immunity to radio frequency signals. Mobile two-way radios and telephone equipment must be installed properly by trained personnel. The following must be observed during installation.

The positive power connection should be made directly to the battery and fused as close to the battery as possible. The negative power connection should be made to body sheet metal adjacent to the negative battery connection. This connection should not be fused.

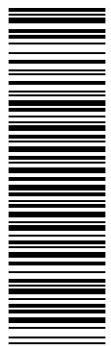
Antennas for two-way radios should be mounted on the roof or the rear area of the vehicle. Care should be used in mounting antennas with magnet bases. Magnets may affect the accuracy or operation of the compass on vehicles so equipped.

The antenna cable should be as short as practical and routed away from the vehicle wiring when possible. Use only fully shielded coaxial cable.

Carefully match the antenna and cable to the radio to ensure a low Standing Wave Ratio (SWR).

Mobile radio equipment with output power greater than normal may require special precautions.

All installations should be checked for possible interference between the communications equipment and the vehicle's electronic systems.



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